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March of the Robo-advisors

The potential for global expansion of digital asset management platforms

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This thesis looks into the robo-advisory market in the U.S. and Europe, with the goal of determining the international potential for a Finnish robo-advisor service and inspecting the interest of foreign service providers in the Finnish market. Fintech is becoming increasingly disruptive for the traditional and conservative financial sector, which has resulted in start-ups building their own robo-advisor platform around the world.

Traditional wealth management is both expensive and exclusive. Automated wealth management in the form of robo-advisors seeks to change this and bring wealth management to the masses at an affordable price. In the U.S. robo-advisors have become a formidable trend, having started out in Silicon Valley and expanded across the country. In Europe the players are smaller, but growing and expanding fast.

The regulation in Europe is headed in a direction that enables more mobility in the member states of the EU and ETA. With MiFID already in force and MiFID II on the way, Europe is clearly headed towards a more flexible and open environment that allows competition across state borders.

An important question regarding robo-advisors is whether or not potential customers will actually choose a platform based on an algorithm over a human advisor. The main advantage of a human advisor over a robo-advisor is customizability of your portfolio and a shoulder to lean on when in doubt. A robo-advisor offers a portfolio at a fraction of the cost, but leaves almost all responsibility on the customer. This can be risky, because we as humans tend to overreact to negative news concerning our portfolio and earnings.

Overall, growth in the robo-advisory industry has been significant, especially in the U.S., and Europe is also seeing companies that are gaining market share and expanding across state borders. With regulations catching up to the desires of the market, robo-advisors will be gaining more freedom and market share in Europe as well.

The Nordic financial markets are lagging behind in this respect, with only a limited offering of robo-advisor services. Sweden is the most advanced with two platforms, one of which is due to launch in autumn of 2016. It is likely that if a robo-advisor expands to Finland, it will be one of these two. When it comes to seeking out fertile ground for a Finnish platform, Estonia would seem to be a good alternative due to their tech-oriented nature and

relatively unsaturated market in digital advisory services.	
Keywords	wealth management, fintech, robo-advisor, automation, disruption, market regulation

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1 Introduction

The early 2000's have been characterized in many industries by fast, widespread digitalization. This is especially true in, for example, the service industry, where customer-oriented services are becoming more and more digitalized in order to achieve a streamlined process and cut down on costs. With digital services becoming more and more common, customers are beginning to demand digital services in order to make doing business easier, faster and more comfortable.

The same applies to the financial industry, in this case more specifically the private banking and wealth management industry. Even though the banking industry in general is a very old and traditional one, disruptive technologies are emerging and causing the need for older players to rethink their way of doing business. This includes online services that have been around for a while and are utilized by most if not all banking service providers, and more recently advisory platforms referred to as robo-advisors (robo-advisors are explained in more detail in chapter 4).

These new disruptive technologies, such as robo-advisors, question the need for traditional financial institutions and offer a low-cost alternative for handling one's wealth management needs – often at a lower cost than the premium for personal advisory services at a private bank. They allow the client to handle the management of their assets using a digital platform in the comfort of their home, without ever having to meet a financial advisor.

1.1 Research background

This thesis was written in co-operation with a client, and it aims to explore trends within private banking and wealth management. The scope more specifically is the growth of assets under management and distribution across geographical boundaries of services known as robo-advisors. It is a rather new and interesting topic, which interests the client both from a potentially threatening, but also from an opportunistic viewpoint.

1.2   Research questions

The research questions for this thesis were discussed together with a representative of the client with their research needs in mind. They are as follows:

1. Which international robo-advisor is most likely to start competing on the Finnish market and why?
2. Which foreign countries should a Finnish service provider (e.g. the client) target if they were to go international with a robo-advisor?

2   A brief history of private banking

Private banking dates all the way back to the middle ages and the Knights' Templar, but the birth of modern private banking occurred during the 17th century. In those times all banks were private banks, and the clientele consisted of wealthy families and individuals, e.g. merchants. This was the case until the emergence of joint stock banks in the nineteenth century. With competition getting more intense, private banks focused more and more on specialized activities in order to stay afloat. In practice this meant moving upmarket, towards "haute banque".

In the battle to survive private banks had to evolve. Through this evolution some banks went from commercial banking to wealth management and others from trade finance to corporate finance. Since they could no longer compete with joint stock banks in the mainstream, private banks had to find niches where they would have a competitive advantage. Some private banks also got into the business of establishing joint stock banks themselves in order to raise capital and benefit from the development.

As Youssef Cassis and Monika Fraser state in the introduction of World of Private Banking (Cassis, Youssef and Philip Cottrell. *The World Of Private Banking*. Farnham, England: Ashgate, 2009. Print), "socio-cultural factors, primarily religion, have been an integral part of private banking, possibly more so than in any other economic activity". Before the World Wars this was even truer than today, with both protestant and Jewish bankers thriving with the help of their networks. These networks often went hand in hand with the social status brought on by the increasing wealth of banking families,

allowing private bankers to have the most exclusive clientele long into the 20th century. During the 20th century, however, with two world wars and the persecution of Jews, some private banks in Germany were taken over by the government and Jewish banking families moved to more tolerant countries, such as England. Late in the 20th century, fewer and fewer banks were privately owned by banking dynasties, and private banking had taken a new meaning in the form of private wealth management, or asset management, returning private banks to serve their upper class clientele as they had in the past.

The new disruptive technology of robo-advisors is changing the picture of private banking yet again, by bringing affordable wealth management to the masses. Start-ups are already targeting larger segments with their low-cost pricing, and some traditional players in the industry, like Charles Schwab, Vanguard, UBS and BlackRock, have already stepped in to the game as well, either by launching their own robo-advisor platform (Schwab and Vanguard) or by acquiring a start-up (BlackRock's and UBS's purchases of FutureAdvisor and SigFig, respectively).

3   Wealth management

Wealth management is a service provided by banks in order to help clients decide what to do with their assets and safeguard or expand their wealth. It is often tailored to fit a specific client's needs, which often makes traditional wealth management involving a human advisor quite expensive. There are two commonly used forms of wealth management, wealth management under a discretionary mandate and wealth management under an advisory mandate. With a discretionary mandate the manager has full control over a client's assets, allowing them to make decisions on-the-go as they see best. Under an advisory mandate the manager has to contact the client each time they want to make a decision. Generally, advisory mandates can be more labor-intensive for the manager and are not quite as profitable as discretionary mandates. Another problem that can surface when using an advisory mandate is that decision-making can be too slow to achieve maximum efficiency, as the manager has to consult their client when making decisions.

When it comes to wealth management and customer profits, the cost structure of the service provided affects profits significantly. Simply put, customer profits are equal to

profits per annum with fees subtracted. This means that the lower the fees, the higher the profits are. This is especially important when managing assets and making purchases over a long period of time, as purchasing fees reduce the amount of capital invested, cutting into the profits significantly due to less interest-on-interest. This is where robo-advisors have an edge, as they often have significantly lower fees than traditional managers. To summarize, a client gets more for their money due to lower fees, and more in returns, as the amount of capital is higher. The longer the time frame, the bigger the role that the size of the fees plays.

Where traditional wealth management has an advantage, however, is the personalization factor. In return for paying a premium, the client receives personalized advice depending on preferences and possibly their personality. A real-life manager also opens up possibilities to discuss the markets more broadly, investment strategy and even tax planning. Meaningful financial conversations are something that the barebones-type build of most robo-advisors cannot offer at this point. This will be discussed further in chapter 6.

4   Robo-advisors

4.1   General

The term "robo-advisor" refers to low-cost digital platforms intended to provide wealth management and investment services to clients. They are characterized by the use of algorithms, low costs, availability and relative ease-of-use.

Robo-advisor services use algorithms to determine which stocks to buy and/or sell. Clients get messages from the service provider based on a questionnaire they filled in when creating their profile, which affects what type of companies the robo-advisor suggests. They are relatively easy to use, as they do not require scheduling an appointment or talking with anyone, but the downside is that the benefits of discussions with an wealth manager are non-existent. With prices ranging from cost-free to low-cost, and often without a minimum investment, services are quite broadly available to everyone.

4.2   Cost structure

Although all robo-advisor services are defined as low-cost, there are a few different ways in which they generate revenue from their clients. Some use a fixed percentage fee per annum of their clients' assets, while others have a monthly fixed fee. Some, like Wisebanyan, even provide their base service entirely for free, only charging for ETF fees and additional services which the client can choose freely to have or not have included in their account.

It seems the most common cost structure is a per annum percentage fee, possibly with an added ETF trading fee and a starting fee. The p.a. fee is often low, approximately between 0.15% (e.g. Betterment) and 1.69% (e.g. Money on Toast), and can vary according to the size of the clients portfolio. Some robo-advisors also offer their service for free for small investors, up to a set AUM limit (e.g. USD 25,000 for Jemstep or USD 10,000 for Sigfig).

The other more commonly used fee is the fixed monthly fee, for example Jemstep's USD 18 for a portfolio of USD 25,000. The fee often rises when the size of the portfolio grows, for example Jemstep's maximum fee of USD 70 per month.

A more unorthodox cost structure is that of Schwab Intelligent Portfolios (SIP), as they do not charge a fee based on the amount of assets a client has, but only their own ETF fees. SIP additionally requires clients to hold 6-30% of their portfolio in cash, which Schwab then uses to generate additional revenues.

4.3   Growth

Although growth has been significant in the last years, the Assets Under Management (AUM) figure is still only a fraction of traditional players' numbers. Use of low-cost solutions might decrease the profit margin for large players, possibly resulting in an unwillingness to adapt new technologies. Some traditional companies like Schwab and Vanguard, however, have launched their own robo-advisor platforms to compete within this relatively new segment. Growth of robo-advisors will be inspected more closely in Chapter 7.

5   Efficient Market Hypothesis

According to investopedia.com, "The efficient market hypothesis (EMH) is an investment theory that states it is impossible to "beat the market" because stock market efficiency causes existing share prices to always incorporate and reflect all relevant information" (Investopedia. 2016. Efficient Market Hypothesis (EMH) Definition | Investopedia. [ONLINE] Available at: http://www.investopedia.com/terms/e/efficientmarkethypothesis.asp. [Accessed 13 April 2016].). It is relevant to the topic because whether or not potential clients of wealth management companies (robo-advisors or firms employing human managers) believe that EMH is factual affects said potential clients' choice of service provider. Theoretically, if a person believes that the EMH is indeed true, they will most likely not employ any sort of asset manager as believing in EMH would have them conclude that an actively managed portfolio can in no way be better than a passively managed portfolio or an index fund.
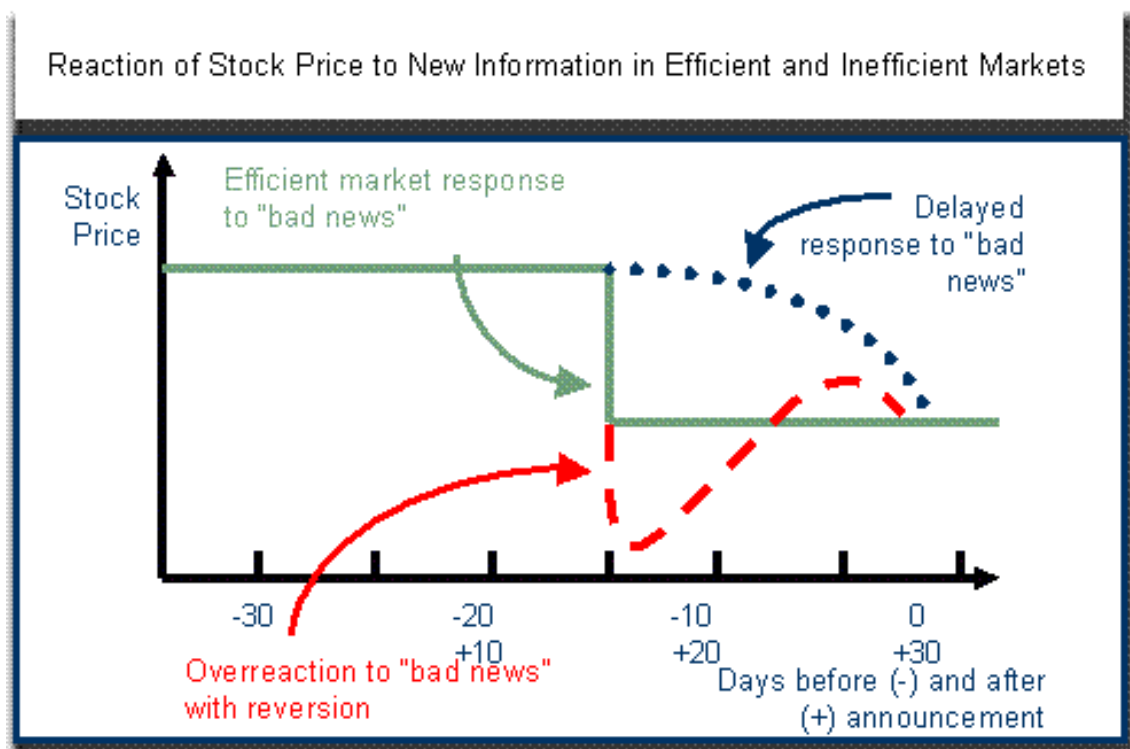

Figure 1. Demonstration of stock market reactions to new information in efficient and inefficient markets. Source: Boundless. 2016. The Efficient Market Hypothesis. [ONLINE] Available at: https://www.boundless.com/finance/textbooks/boundless-finance-textbook/security-market-efficiency-and-returns-9/market-efficiency-85/the-efficient-market-hypothesis-365-7276/. [Accessed 11 May 2016].

5.1   Forms of EMH

However, there are three different forms of EMH; weak form, semi strong form and strong form (Efficient Market Hypothesis . 2016. Efficient Market Hypothesis . [ONLINE] Available   at: http://www.morningstar.com/InvGlossary/efficient_market_hypothesis_definition_what_i s.aspx. [Accessed 14 April 2016].). In the strong form stock prices reflect all public and private information, leading to investors not gaining excessive earnings. Although, with the large amount of fund managers out there it is statistically probable that some managers would be able to continuously beat the market even in the long term. Believers in the strong form of EMH would still not be likely to choose an actively managed portfolio, as finding such a manager could prove to be incredibly difficult.

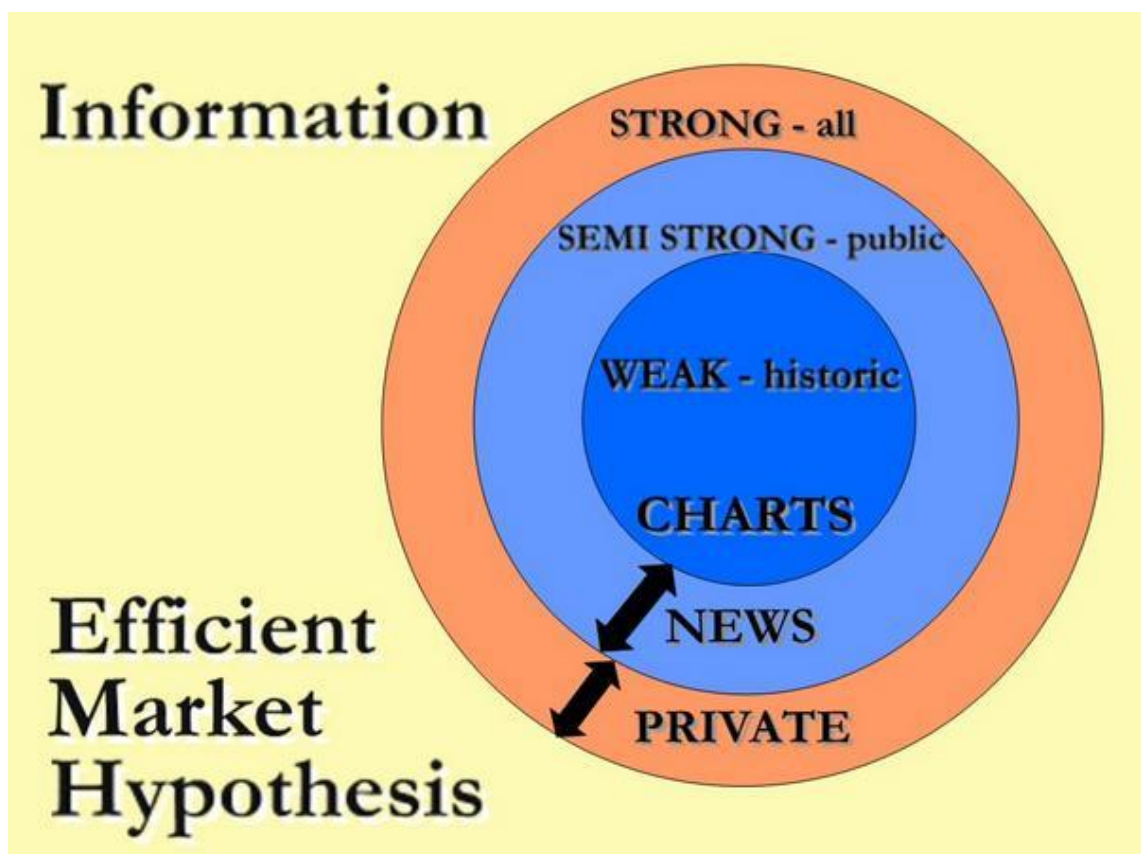Figure 2. Demonstration of the different forms of EMH and the stock market information each form of the theory claims stock prices reflect. Source: Living Stingy: Why the Efficient-Market Hypothesis is Bullshit. 2016. Living Stingy: Why the Efficient-Market Hypothesis is Bullshit. [ONLINE] Available at: http://livingstingy.blogspot.fi/2014/05/why-efficient-market-hypothesis-is.html. [Accessed 11 May 2016].

In its semi strong form, EMH assumes that stock prices react rapidly to all new information (which is not far from the truth in today's information-driven world), resulting in investors not gaining excessive earnings using said information. It also suggests that excessive earnings cannot be gained with the help of fundamental analysis, as security prices already reflect all market and non-market public information.

The weak form of EMH implies that excessive earnings cannot be gained in the long run with the help of historical data and that current share prices are not indicative of future trends. Technical analysis cannot be utilized to gain excessive earnings, but there is a possibility that using fundamental analysis may produce excess returns.

Obviously, the weak form of EMH is the most favorable from the point-of-view of asset managers. Using the expertise of human asset managers or the algorithms of robo-advisors, it should be possible to gain excessive earnings even if share prices follow a so-called "random walk". This implies that it could be lucrative to opt for an actively managed portfolio, and the choice between human advisor and robo-advisor is left to the client and their perception of the points raised in chapter 6.

5.2   Challenges for EMH

EMH has a fair amount of believers, but as with any theory, there are also non-believers. One of the causes for non-belief is stock market bubbles and subsequent stock price crashes. The argument is that if stock market prices were to fully represent said stocks' value, it should be impossible for a bubble to be created and for it to burst. A good example of this is the 2010 flash crash. According to Kirilenko, Kyle, Samadi and Tuzun, a large-scale sell order can cause a crash in the stock market, which is exactly what happened on the 6th of May in 2010 (Kirilenko, Kyle, Samadi, Tuzun. 2014. The Flash Crash: The Impact of High Frequency Trading on an Electronic Market. [ONLINE] Available at: http://www.cftc.gov/idc/groups/public/@economicanalysis/documents/file/oce_flashcrash0314.pdf. [Accessed 12 May 2016].). If EMH were to be applicable in its strong form, these types of crashes would not be possible, as it is unlikely that an actual change in the value of the stocks in question caused indexes like S&P 500, Dow Jones Industrial Average and Nasdaq Composite to decrease in value as much as 9% before rebounding to a smaller 3,2% loss at the end of the day (Montreal Gazette, Janet

Whitman. 2016. The markets' wild ride. [ONLINE] Available at: http://www.montrealgazette.com/business/fp/markets+wild+ride/2994890/story.html. [Accessed 12 May 2016].).

5.3 Implications for robo-advisors regarding EMH

As is the case with many things in the real world, EMH possibly has some truth to it especially in its weaker forms. There are facts that show EMH cannot be the absolute truth, for instance stock market and real estate bubbles, but also facts that speak for EMH, e.g. the claim that history is an incomplete indicator of future trends and events. The significance of EMH to robo-advisors lies in the fact that robo-advisors are a semi-passive form of investing as they often invest in ETF's and index funds. The weak form of EMH approves of this, but still leaves room for some active management and advisor expertise as well, even though it states that in the long run excessive earnings will be difficult if not impossible to achieve. If a consumer believes in EMH, they are more likely to utilize passive asset management, e.g. robo-advisors and their ETF's, because they will feel that whatever they do, they simply cannot beat the market. This makes investing in passive ETF's and index funds sensible. If, however, consumers believe that EMH is a complete scam they will be interested in active fund management and investing in stocks. They may purposefully attempt to beat the market, which is difficult to do with passive ETF's and especially with index funds, whose sole purpose is to follow market movements.

6   MiFID & MiFID II

6.1   MiFID

MiFID, short for Markets in Financial Instruments Directive (Directive 2004/39/EC), is a directive that was adopted in the European Union (EU) in April of 2004, coming into force in November 2007 (Investment Services and regulated markets (MiFID 1 & MiFID 2). 2016. Investment Services and regulated markets (MiFID 1 & MiFID 2) - European Commission. [ONLINE] Available at: http://ec.europa.eu/finance/securities/isd/index_en.htm. [Accessed 16 July 2016]). The purpose of the directive is to help European financial markets become more

competitive through harmonization of regulation and the creation a single homogenous market for investment services within the EU. Another aim of the directive was to help consumers or investors enjoy a higher level of protection concerning financial instruments throughout the Union. According to the directive: "The organisational requirements and conditions for authorisation for investment firms should be set out in the form of a set of rules that ensures the uniform application of the relevant provisions of Directive 2004/39/EC. This is necessary in order to ensure that investment firms have equal access on equivalent terms to all markets in the Community and to eliminate obstacles, linked to authorisation procedures, to cross-border activities in the field of investment services". This means that any firm functioning within a member state of the European Community should have the same requirements and access to financial markets, enabling freedom for the offering of services across geographical boundaries. This would allow any player that has authorization in one member state (e.g. vaamo in Germany) to expand their activities to another member state with minimal bureaucracy, as the legislation and regulation in the target state would be uniform to that in the players home state under the framework of the MiFID directive. In short, if a firm meets the criteria to function in one member state of the European Community, the firm meets the criteria to function in any member state of the European Community.

6.2   MiFID II

MiFID II is the second version of the MiFID directive, planned for application on the 3rd of January in 2018. The aim of MiFID II is essentially the same as the aim of MiFID, but MiFID II takes the directive several steps forward. Most notably the directive aims to increase the level of access and transparency between financial markets within the European Community. As stated in a supplement (European Commission. 2016. Commission delegated regulation supplementing Regulation (EU) No 600/2014 of the European Parliament and of the Council with regard to regulatory technical standards on clearing access in respect of trading venues and central counterparties. [ONLINE] Available at: http://ec.europa.eu/finance/securities/docs/isd/mifid/rts/160624-rts-15_en.pdf. [Accessed 20 July 2016]) to the MiFID II regulation, "[the regulation] aims at removing the commercial barriers may exist to prevent competition in the clearing of financial instruments and at avoiding discriminatory practices, both at the CCPs' and trading venues' levels. The purpose of open access is to promote greater competition

among market infrastructures and ultimately reduce costs for end investors". This is basically the same statement as in the original MiFID directive.

6.3   Implications

Even though MiFID already opened up the markets and harmonized reporting practices for the sake of transparency, the European Commission deemed it necessary to take the idea further. According to Tuomas Majuri of Finanssialan Keskusliitto (see Appendix 2), the new directive will be comparable to what the Basel Committee on Banking Supervision (BCBS) is doing. In practice, producing and offering certain investment services will require a license, but once an operator has been approved for this license in one member state, said operator will be allowed to provide said services in any EU or ETA member state. The end result is expected to be visible in the form of increased protection for the consumers of these services and increased competition, resulting in lower costs for said consumers.

In the future it will remain to be seen whether or not the regulation will be taken even further, perhaps towards the model which is in use in the Netherlands and Great Britain. This model prohibits kickbacks to asset managers from selling certain financial products, lowering the profit margin for the service provider. Because this money is not coming in from the kickbacks, the end consumer or investor will have to pay for it in the form of increased management fees. Some smaller investors will not be willing to pay for this increase, resulting in an advice gap, which according to Mr. Majuri has already occurred in Great Britain. These types of investor groups have the potential to be fertile ground for robo-advisors to grow on.

7   Selecting between robo-advisors and a traditional manager

One of the biggest advantages of having an asset manager is having someone to talk to. Managers are quite well acquainted with the markets, and are familiar with common pitfalls within wealth management and investing. This leads to added value for the client because the manager can help clients avoid psychological traps and other mistakes unexperienced investors might make.

Bachmann and Hens (Hens, Thorsten and Bachmann, Kremena. *Behavioural Finance For Private Banking*. Chichester, England: John Wiley & Sons, 2008. Print) argue that the most valuable factor from the clients' point of view is perceived service quality. In their book they also state that understanding clients' preferences and being prepared for their reactions is the key to being successful in attaining and keeping a share of the clients' wallets. The book goes on to claim that managers who do not understand behavioral finance are crippled in a way, as they are unaware of clients' needs and unprepared for clients' reactions. In this light, it would seem that there are limited opportunities for robo-advisors in the wealth management industry.

However, the high cost of private banking and wealth management services has opened the door for low-cost solutions like robo-advisors, even though their approach is completely different compared to traditional service providers. This is the key factor that makes robo-advisors so appealing to investors, especially those who are just getting started and do not have a lot of assets to work with. Where Bachmann's and Hens' views clash with robo-advisors' world view is the claim that to be successful it is important to understand behavioral finance and the needs of clients. Robo-advisors do offer surveys to clients to determine their needs, but can a computerized survey be efficient and precise enough to be effective? Possibly to some extent, but still nowhere near as good an alternative as a human manager when looking for personalized service. In the end, robo-advisors cannot help clients avoid poor decisions and panic in the same way as an asset manager can, which can result in devastating financial outcomes, disappointments and ultimately, withdrawal of assets. With robo-advisors the client has a certain responsibility to make the right decisions by themselves, which requires that the client is somewhat engaged in the world of investing. When there is nobody to talk you off of the ledge, you need to be able to rationalize your alternatives in order to reach the best possible endgame.

It is possible that robo-advisors attract unexperienced investors due to availability and low costs, thus appealing to the masses. Whether this is a threat, an opportunity or possibly both is a matter of opinion. The downside of this is that clients are not familiar with the markets they are involved in and make decisions that end up costing them money. When a client does not have a lot of assets and ends up losing a large chunk of their wealth due to a poor decision, it could put them off investing, which in this case means that a robo-advisor would lose a client.

Unfortunately, unlike high net worth individuals (HNWIs), small-time investors do not have the luxury of having several options. Private banking fees are high and there seems to be a demand for a low-cost alternative. Whereas traditional managers and private banks seek the attention of HNWIs and attempt to increase their AUM by getting a bigger share-of-wallet from these customers, robo-advisors might find a lucrative customer base in low net worth individuals if they can attract clients in larger volumes.

Another significant question is whether or not robo-advisors are able to "beat the market", or if they are just high-tech tools for following an index. Consistently beating the market is extremely difficult, if not impossible, and requires luck in addition to knowledge and skill. On the other hand, low net worth individuals investing small amounts might not be seeking maximized profits, but steady growth and savings towards their pension or a specific financial goal. This does not change the fact that for following an index another low-cost low-management alternative is investing in an index fund, so using a robo-advisor only makes sense if an investor is seeking higher profits than he would get from investing in an index.

One point that could be raised is in regards to the trust that is placed in a manager or wealth management firm by the client. Can robo-advisors invoke the kind of trust-relationship with clients that is required in advisory situations? This obviously depends highly on the individual client who is making that choice, and it seems that, according to research by the client in co-operation with Hartford Funds, millennials are more eager to use technology to aid their investment needs than retired clients. The numbers show that 68% of millennials feel comfortable using technology when it comes to wealth management, in contrast to 30% of already-retired clients. Interestingly, the same research shows that a significant portion (93%) of millennials recognizes why a human advisor can be the more attractive alternative compared to a technology-driven robo-advisor. This creates an interesting situation, as millennials seem to be interested in using technological assistance, but they also value the advice given by a human advisor. According to the research, these clients born between 1980 and the mid-2000s will need a complicated mix of services related to their financial needs, and service providers that can get these clients on board early on will benefit the most. Fortunately, some traditional large wealth management firms like Schwab, BlackRock and Vanguard have entered the robo-advisor segment and will hopefully bring some credibility and visibility with them. At least the growth of these newcomers (as shown in

Chapter 7, Figure 3) shows promise, as Schwab and Vanguard quickly surpassed their start-up competitors in AUM.

Overall, handling disappointments is a key factor in maintaining an interest in investing. Robo-advisors give more responsibility to the client, which may result in poor financial performance, a loss of interest in investing and withdrawal of assets. This is a lose-lose situation as the client loses the benefits of wealth management and the robo-advisor loses a client and the AUM that client brings to the robo-advisor. The trade-off of low-cost versus high maintenance is an essential part of the selection process between robo-advisors and traditional wealth management. Wealthy clients may opt for a human manager because they can afford it, but low-income clients looking for small profits on their savings do not have the luxury of several alternatives. Even some HNWI's may choose robo-advisors if they feel that paying a premium for private banking is not worthwhile, so in a way robo-advisors have more to gain than to lose. If nothing else, robo-advisors have a "niche" segment in the large masses of regular workers that cannot afford traditional wealth management, which should comprise a huge market altogether.

8 Advance of the robo-advisors

8.1 Growth in numbers

As mentioned in chapter 4, the growth of robo-advisors has been significant. Although they still cannot compete in AUM with traditional services, the largest players in the robo-advisor industry have amassed a notable amount of clients and assets as Figures 1 and 2 show.
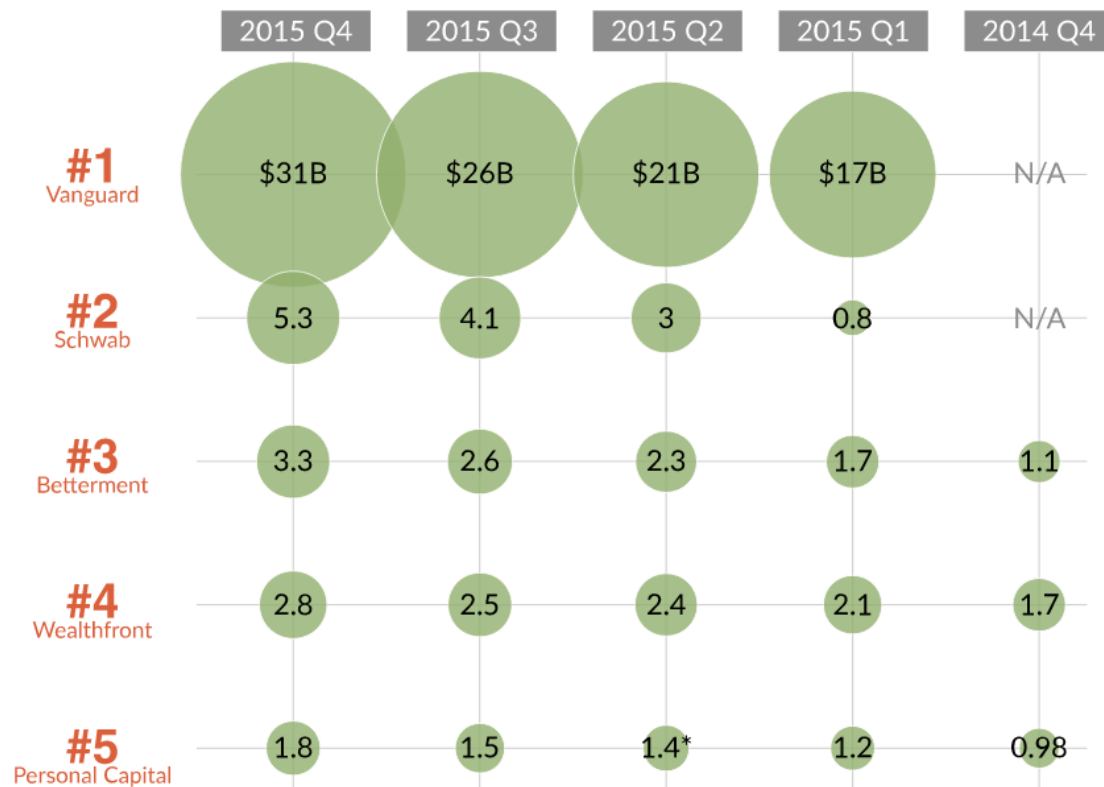
Figure 3. The growth of AUM of the 5 largest robo-advisor services between Q4/2014 and Q4/2015. Source: Alessandra Malito and Ellie Zhu . 2016. Top 5 robo-advisers by AUM . [ONLINE] Available at: http://www.investmentnews.com/article/20160225/FREE/160229960/top-5-robo-advisers-by-aum. [Accessed 04 May 2016].

The two largest players according to Figure 3 are Vanguard and Schwab, both traditional wealth management firms. Some of the growth of SIP and Vanguard Personal Advisor can be explained by their already-large customer base prior to the release of their robo platform. This results in the fact that in addition to getting new customers for the platform they will have been able to draw from their large pool of existing clients, unlike their start-up competitors.

Out of robo-advisor start-ups, Betterment is the largest in terms of AUM. According to Betterment's own website they have had over 100,000 clients as of July 2015, and that amount has climbed to over 150,000 clients with an AUM number of over $4 billion by the 15th of April 2016 as mentioned on the front page of Betterment.com (Betterment. 2016. Betterment | Investing Made Better. [ONLINE] Available at: https://www.betterment.com/. [Accessed 25 April 2016]). Wealthfront is lagging a little bit behind with their AUM of $3 billion (Investor Junkie. 2016. Betterment vs.

Wealthfront - Which is Better?. [ONLINE] Available at: https://investorjunkie.com/36355/betterment-vs-wealthfront/. [Accessed 03 May 2016].), but in addition to these two and Personal Capital (AUM $1.9 billion) it seems there are no other robo-advisors that reach 10-figure AUM numbers. The closest follower is FutureAdvisor with $695 million in AUM according to Better Finance in Figure 4.

BF BETTER FINANCE	US				UK	FRANCE	GERMANY
	BETTERMENT	WEALTHFRONT	PERSONAL CAPITAL	FUTUREADVISOR	MONEY ON TOAST	YOMONI	Vaamo
SIZE BY ASSETS UNDER MANAGEMENT	$3 billion	$2 billion	$1.9 billion	$695 million	£150 million	Target of €1bn of assets under management by 2020. Completed 1st fundraising round of €3.5 mln	Completed 1st fundraising round of €2.5 mln
SIZE BY NUMBER OF CLIENTS	125.000	355.000	900.000	12.600	5.000	?	250 (in 2014)
ANNUAL FEES (% IN DOLLAR OR EURO) BY AMOUNT	Annual fee of between 0.15% and 0.35% of assets under management, assessed quarterly. Those with at least $100,000 invested will pay 0.15%. This includes commissions, but not individual securities' fees. Investors with a balance less than $10,000 and who deposit less than $100 per month will be charged a $3 monthly flat fee.	Wealthfront manages the first $10,000 for free. After that, the company charges 0.25% per year on amounts over the initial $10,000, assessed monthly. Customers aren't charged trading commissions, but will pay fund expense ratios.	Personal Capital charges one, all-inclusive fee of between 0.49% and 0.89% of assets under management. Customers with less than $1 million will pay 0.89%, and, for assets above $1 million, fees decrease progressively toward 0.49% above $10 million.	FutureAdvisor charges 0.5% each year on assets under management, billed quarterly. Customers may incur some transaction fees.	There is a 1% annual management charge, plus underlying fund charges of 0.69% = 1.69%	All-inclusive fees of 1.6 per cent per year, including: Yomoni management fee (0.7 per cent), life insurance fee (0.6 per cent) and underlying portfolio costs (exchange-traded fund fees of 0.3 per cent). You can invest from 1000€.	From 1000€ up to 30,000€ (0,99%) - From 30,000 up to 50,000€ (0,79%) - More than 50,000€ (0,49%)
ANNUAL ADVICE FEES IF INVESTMENT 10,000 €/$	0,35%	0,00%	0,89%	0,50%	1,00%	0,7% + 0,6 life insurance fee	0,99%
ANNUAL ADVICE FEES IF INVESTMENT 100,000 €/$	0,15%	0,25%	0,89%	0,50%	1,00%	0,7% + 0,6 life insurance fee	0,49%
PRODUCTS AVAILABLE	Financial planning, retirement, IRAs, Trusts, Tax losses Harvesting +	Individual accounts, joint accounts, trust accounts, IRAs, 401k rollovers	Retirement & 401k, estate planning, college savings, tax management	Retirement planning, college savings, investment	Investment, ISAs, Pensions	Savings, retirement, real estate project and transmission	Savings and Investments
UNDERLYING INVESTMENT FUNDS	Stock ETFs	Stock ETFs	Stock ETFs	Stock ETFs	Broad range of funds including unit trusts, OEICS and tracker funds.	Stock ETFs	MSCI World
TYPICAL UNDERLYING REGIONAL OR NATIONAL EQUITY INDEX FUND	Vanguard U.S. Total Stock Market Index ETF (VTI)	Vanguard U.S. Total Stock Market Index ETF (VTI)	na	Vanguard S&P 500 ETF (VOO)	na	Amundi ETF CAC 40	Dimensional Funds (Global Core Equity Fund)
UNDERLYING FUND ANNUAL FEES	0,05% for Vanguard	0,05% for Vanguard	0,06%	0,05% for Vanguard	0.69% covers all underlying fees	0.3% covers all underlying fees	Ranging from 0,38% to 0,48% depending on risk.
AVERAGE UNDERLYING FUND FEES	0,11% estimated average *	0,12% estimated average *	0,10% estimated average *	0,17% estimated average **	0.69% covers all underlying fees	0.3% covers all underlying fees	Ranging from 0,38% to 0,48% depending on risk.
TOTAL ADVICE + FUND FEES FOR 10,000 €/$:	0,46%	0,12%	0,99%	0,67%	1.69%	1,60%	1,41%
TOTAL ADVICE + FUND FEES FOR 100,000 €/$:	0,26%	0,37%	0,99%	0,67%	1.69%	1,60%	0,91%
SOURCES	http://support.betterment.com/customer/portal/articles/93426 5 *	https://research.wealthfront.com/whitepapers/portfolio-review/ *	https://www.personalcapital.com/assets/whitepapers/PC_Fees_WhitePaper.pdf *	https://www.quora.com/Does-the-stated-fee-from-digital-advisers-like-Wealthfront-Betterment-Personal-Capital-or-FutureAdvisor-include-the-cost-of-the-underlying-ETFs-or-mutual-funds **	www.moneyontoast.com	www.yomoni.fr	www.vaamo.com
2016 Copyright © Better Finance							

Figure 4. Better Finance chart showing key information for some robo-advisors. Source: Robo Advisors 010216. 2016. Robo Advisors 010216. [ONLINE] Available at: http://betterfinance.eu/fileadmin/user_upload/images/Robo_Advice_Table/Robo_Advisors_-_BF_Comparison_Table.pdf. [Accessed 04 May 2016].

As shown in Figure 4, the common factor between the two largest robo-advisor start-ups is that they both invest in Vanguard ETF's. Figure 4 also shows that although Betterment has 50% more AUM than Wealthfront, Wealthfront has over three times more clients than its competitor. This could have something to do with the cost structures of the two start-ups. Where Betterments clients get relatively smaller fees when their AUM increases, Wealthfront's fees increase along with the amount of assets managed. Correlation does not prove causality, but these statistics show that the average invested amount per client for Betterment must be significantly larger than that of Wealthfront (Betterment $24,000 and Wealthfront approximately $6,000). One could draw the conclusion that because Wealthfront offers clients their first $10,000 without fees (except underlying fund fees), they attract clients who have total assets of less than that amount. On the other side of the fence is Betterment, who actually have discounted fees for clients that have more assets, attracting more affluent individuals.

According to an article by Bloomberg, written in 2014 (Bloomberg.com. 2016. Helping Gen Y Manage Its Millions - Bloomberg. [ONLINE] Available at: http://www.bloomberg.com/news/articles/2014-05-29/money-manager-wealthfront-targets-techies-who-hold-stock-options. [Accessed 05 May 2016].), two years ago the situation was a mirror image of the current one. Wealthfront offered their services to Twitter employees (over 300 of them had signed up as clients by then, with a collective AUM of over $300 million), had more total AUM and fewer clients than Betterment. Although client numbers for Betterment and Wealthfront were significantly smaller in 2014 (34,400 and around 11,000, respectively), more recent statistics show a turnaround in the type of clients each player has been able to sign on to their service.

Perhaps even surprisingly, Personal Capital (the third largest robo-advisor by AUM at $1.9 billion) is by far the biggest robo-advisor when it comes to the amount of clients that have signed up for the service. Betterment's 125,000 and Wealthfront's 355,000 clients pale in comparison to Personal Capital's whopping 900,000 users (numbers shown in Figure 4). What makes this even more surprising is the fact that Personal Capital's roughly calculated average investment of slightly over $2100 would be accompanied with total fees of 0,99%. If these clients were to sign up with Betterment or Wealthfront they would have total fees of 0,46% or a measly 0,12%, respectively.

When it comes to the more traditional players and their growth, the most recent combined AUM number for Schwab's SIP and Institutional Intelligent Portfolios (IIP) is $6,6 billion as of the 31st of March, 2016 (see Appendix 1). This sum is shared among some 73,000 accounts in total. When looking solely at this number, Schwab's platforms hold more AUM than any of their start-up competitors, but as was mentioned earlier in this chapter, some of that AUM and clientele has come from their traditional advisory service. According to Grace Warrick of Schwab (see Appendix 1), around 80% of accounts currently being opened are opened by existing clients. This is a huge portion, even though their combined share of AUM is only two-thirds of the two platforms' total AUM. This shows that robo-advisors can in fact be successfully marketed to clients of traditional advisory services, but the effect of the users already being clients of said advisory service companies on the success of the marketing is unknown at this point, and had they been approached by a start-up robo-advisor service the result might have been quite different.

In Europe there are several robo-advisory start-up companies, but they are notably smaller than their U.S. counterparts when it comes to user base and AUM. For example Vaamo, a German robo-advisor founded in 2013, currently has less than 10,000 clients with an average investment of around 10,000 EUR (see Appendix 2). With these given numbers, the maximum total AUM they could possibly have is less than 10 million EUR. This AUM amount is easily surpassed by e.g. Money-On-Toast, who have around 150 million GBP under their management according to Figure 4. Even though Money-On-Toast is the older company of the two, having been founded in early 2012, they still only have a one-year head start, making the difference in client wealth gathered significant. Overall, there is less information about the European robo-advisor service providers available, but it seems that growth in Europe has been slower than in the U.S.

Sweden is also seeing the dawn of robo-advisors as players like Primepilot and Tieless are entering the market. Tieless, founded in 2016 (Tieless AB - Företagsinformation. 2016. Tieless AB - Företagsinformation. [ONLINE] Available at: http://www.allabolag.se/5590618004/Tieless_AB. [Accessed 29 August 2016]), is a Swedish robo-advisor firm, backed by Stellum and working in co-operation with Saxo Bank (Tieless | Om oss. 2016. Tieless | Om oss. [ONLINE] Available at: https://www.tieless.se/om-oss/. [Accessed 29 August 2016]). They have already launched their service which uses their own algorithm to invest in a diversified portfolio of ETF's (Tieless | Metod. 2016. Tieless | Metod. [ONLINE] Available at: https://www.tieless.se/metod/. [Accessed 29 August 2016]). Primepilot, founded in 2015 (Primepilot AB - Företagsinformation. 2016. Primepilot AB - Företagsinformation. [ONLINE] Available at: http://www.allabolag.se/5590020672/Primepilot_AB. [Accessed 29 August 2016]), on the other hand is planning to launch their platform towards the end of fiscal year 2016 (digital.di.se/. 2016. Vinnova investerar i robotrådgivare. [ONLINE] Available at: http://digital.di.se/artikel/vinnova-investerar-i-robotradgivare#. [Accessed 29 August 2016]). According to DiGITAL's article, Primepilot received an investment of roughly 2,2 million SEK from Vinnova, a government agency dedicated to investing in Swedish innovations and research (About Vinnova - Vinnova . 2016. About Vinnova - Vinnova . [ONLINE] Available at: http://www.vinnova.se/en/About-Vinnova/. [Accessed 29 August 2016]). According to Primepilot's website, the platform is currently taking applications for their closed beta test. There are no specific AUM figures to be found for these two Swedish players, but according to Statista the entire Swedish robo-advisor market amounts to approximately 224 million USD (Statista.

2016. Robo-Advisors - Sweden | Statista Market Forecast. [ONLINE] Available at: https://www.statista.com/outlook/337/154/robo-advisors/sweden#. [Accessed 2 September 2016]) in 2016.

There is currently even a robo-advisor functioning in Finland, Evli Verkkopankkiiri. Verkkopankkiiri has a minimum asset requirement of 30,000 EUR, which is considerably smaller than the minimum asset requirement for their private banking service, 300,000 EUR. A majority of their marketing is based on the fact that, according to their website (Verkkopankkiiri. 2016. Verkkopankkiiri. [ONLINE] Available at: https://www.evli.com/fi/yksityiset/verkkopankkiiri.html. [Accessed 28 July 2016]), their managers who tend to consumer-investors' portfolios also handle portfolios of large corporations. According to their review of the financial year 2015 (Evli Bank Plc. 2016. Evli Bank Plc Review of the financial year 2015. [ONLINE] Available at: https://www.evli.com/dam/jcr:8e679b90-5105-4e62-bee7-fc5721fa12d2/Investor%20presentation%2026%201%20%202016%20Evli%20Bank%20Plc.pdf. [Accessed 28 July 2016]) and their bank review of H1/2016 (Evli Bank Plc. 2016. Evli Bank Plc Review of H1 2016. [ONLINE] Available at: https://www.evli.com/dam/jcr:7fa6d27c-73f8-4679-8919-8bf1c61addb7/Investor%20presentation%201_6_2016.pdf. [Accessed 28 July 2016]), Evli's AUM is currently 9.4 billion EUR, which is the same figure as at the end of the fiscal year 2015. There are no separate figures available specifically for their robo-advisor service, but according to Statista, the Finnish robo-advisory market amounts to a comparatively measly 33 million USD (Statista. 2016. Robo-Advisors - Finland | Statista Market Forecast. [ONLINE] Available at: https://www.statista.com/outlook/337/135/robo-advisors/finland#. [Accessed 2 September 2016]). If the case truly is that the entire Finnish robo-advisor offering consists solely of Verkkopankkiiri, one could reason that the AUM ought to be quite close to Statista's number.

Other Northern European countries that can be found on Statista are Norway, with a robo-advisor AUM of just over 126 million USD (Statista. 2016. Robo-Advisors - Norway | Statista Market Forecast. [ONLINE] Available at: https://www.statista.com/outlook/337/145/robo-advisors/norway#. [Accessed 03 September 2016]), Denmark with almost 92 million USD (Statista. 2016. Robo-Advisors - Denmark | Statista Market Forecast. [ONLINE] Available at: https://www.statista.com/outlook/337/133/robo-advisors/denmark. [Accessed 03

September 2016]) and Estonia with only around 2 million USD (Statista. 2016. Robo-Advisors - Norway | Statista Market Forecast. [ONLINE] Available at: https://www.statista.com/outlook/337/145/robo-advisors/norway#https://www.statista.com/outlook/337/134/robo-advisors/estonia. [Accessed 03 September 2016]).

At least in the five aforementioned Nordic countries mentioned in the three previous paragraphs there would seem to be a supply, however limited it may be, and accordingly a demand for robo-advisors. This could be indication of the fact that the Nordic countries, being quite tech-oriented, have financial markets that are ripe to the idea of robo-advisory. For now, the amount of players competing in these markets is not very high, so it is a possibility that there might be a significant amount of untapped potential customers. According to Taviq CEO Juho Isola (Lähteenmäki, Pekka, 2016. Digitsunami iskee pankkeihin. Talouselämä, 30, 32-36), if investment firms in Finland do not start using automated asset management in 2017 at the latest, there is something badly wrong. He mentions SaxoSelect, a service offered by Danish Saxo Bank in co-operation with BlackRock, which happens to be the largest fund manager in the world (Kauppalehti. 2016. . [ONLINE] Available at: http://www.kauppalehti.fi/uutiset/nordean-ex-pomo-blackrockin-mannekiiniksi/cj2n7kPZ. [Accessed 06 September 2016]). Isola believes that marketing of SaxoSelect will begin soon in Finland as well, although he mentions no specific timeframe. Additionally, Primepilot CEO Ulf Ahrner implies that Primepilot would be interested in entering the Finnish market in an interview with Kauppalehti (Kauppalehti. 2016. . [ONLINE] Available at: http://www.kauppalehti.fi/uutiset/robottineuvojalla-saastaa-helposti-auton-hinnan/e43MXjjP. [Accessed 26 September 2016]). According to the interview, Primepilot uses the technology of FA Solutions, a Finnish company, which would make it easier to enter the market as Primepilot is already familiar with the market, regulations and transparency requirements. At the end of the article Ahrner states that they might enter the Finnish market as soon as the end of 2017.

8.2   Geographical boundaries

Few robo-advisor service providers have spread across significant geographical boundaries so far. In the U.S. robo-advisors have spread across state boundaries, and services are offered widely across the nation, but not further. Grace Warrick of Charles Schwab says that SIP and IIP have no intentions to go abroad at this point (Appendix

1). The main reasons for this, she states, is that Charles Schwab "only have the registration to sell securities in countries where we're already established", and that the company does not have "multi-currency capabilities ideal for serving international clients". According to Ms Warrick, Charles Schwab are doing well in the U.S. and are planning to focus on that market for now. With the U.S. wealth management segment being as huge as it is this seems plausible, even though she goes on to add that the regulatory and capability investments required for expanding abroad might be considered at a later point in time. This raises the question, is it even possible or financially plausible to expand to a foreign country?
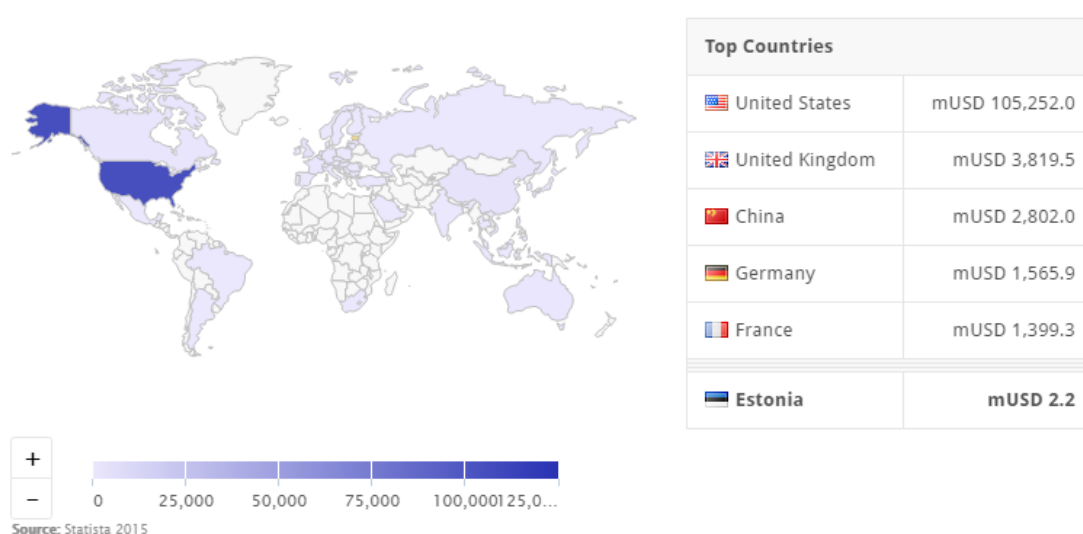

Figure 5. Statista graph demonstrating how robo-advisors' AUM is spread globally. Source: Statista. 2016. Robo-Advisors - Estonia | Statista Market Forecast. [ONLINE] Available at: https://www.statista.com/outlook/337/134/robo-advisors/estonia#market-globalTransactionValue. [Accessed 2 September 2016].

If you ask MoneyFarm, it definitely is. MoneyFarm is an Italian robo-advisor start-up, founded in 2011, that has over 60,000 users in its native country, Italy, and as of the 19th of April, 2016, the U.K. (Finextra Research. 2016. MoneyFarm launches UK wealth management app . [ONLINE] Available at: https://www.finextra.com/pressarticle/64069/moneyfarm-launches-uk-wealth-management-app. [Accessed 11 May 2016].). According to MoneyFarm founder Paolo Galvani in his interview with Wealth Manager (Wealth Manager. 2016. Under the bonnet of the Italian robo-adviser with UK aspirations - Citywire. [ONLINE] Available at: http://citywire.co.uk/wealth-manager/news/under-the-bonnet-of-the-italian-robo-adviser-with-uk-aspirations/a865143. [Accessed 01 August 2016]), going abroad and launching

in the U.K. is only the start in their intentions to build and launch an international platform across Europe. He also states that London had "a very interesting mixture of opportunities, the market, and further development for the company". He also went on to say that Italy was used as a launch pad due to the fact that MoneyFarm management was familiar with the local retail market. The main reason for choosing U.K. as their primary expansion destination was the regulatory environment that has been created recently. In Mr Galvani's opinion, the U.K. is spearheading a new era in retail advisory regulation, and in the future other countries in Europe will learn from what the U.K. has done during their "regulatory shake-up" in the past few years. He believes that when other countries follow, their experience and possible success in the U.K. will be applicable to other foreign markets as well, as he feels the U.K.'s regulatory modifications will create a trend in Europe and light the way into the future of retail advisory regulation across Europe. Whether or not this will really happen is anyone's guess, but with the European Union's long traditions in advancing trade et cetera, Europe in general is quite a tightly-knit financial area, so this could in fact be a plausible scenario. With the emergence of MiFID II it would seem that the EU is indeed headed in a more progressive direction with their regulations, but the effects of Great Britain's "Brexit" vote and whether or not it will have an impact on regulatory developments elsewhere in Europe remains to be seen.

Another European robo-advisor that is considering the move to foreign markets is vaamo, the German robo-advisor firm. Dr. Oliver Vins, founder and CEO of Vaamo, states that currently vaamo is focusing on the German market, which they see as huge (Appendix 2). However, he also goes on to state: "it is likely that [vaamo] will enter other European markets in the future". Whether they also intend to expand to the U.K. after MoneyFarm has paved the way or perhaps an entirely different country remains to be seen, but as vaamo is currently functioning in a country that uses euros as their currency, the problem of having "multi-currency capabilities" that Ms Warrick of Charles Schwab was worried about might not be a problem at all.

In general it would seem that robo-advisors operating in the USA are not under any significant pressure to expand their business to other countries due to the size of their domestic market and difficulties with multi-currency capabilities as stated by Ms Warrick of Charles Schwab. However, the situation in Europe is quite different. New directives and regulations intended at balancing competition between different financial markets and enhancing transparency are on the drawing board in the EU, hopefully

resulting in a versatile offering of digital financial services from players across the entire European Community. One concern about the unity of Europe as a financial area has to do with Great Britain's Brexit vote. In June of 2016 the British people voted to leave the European Union, and the implications of this resignation are still unclear. Arguably, as MiFID II and MiFIR are already on the way, it is unlikely that the possible separation of Great Britain from the EU will affect the new dynamics that will be introduced between other member states with the new directive and regulation. According to representatives of European robo-advisor companies, there is an interest in expanding to other European countries in the future and with new directives and regulations making these moves simpler to execute, it is highly likely that Europe will see more multi-national robo-advisors besides MoneyFarm.

9 Conclusion

Robo-advisory has clearly emerged as a viable option in the U.S.A. for several customer segments, from Silicon Valley HNWI's to regular middle-class consumers looking to invest a portion of their income for one of a number of reasons. The collective AUM of the major U.S. robo-advisor platforms is significant to say the least, and the market offering consists of not only start-ups, but also large, traditional asset management firms that have either acquired a ready platform or developed their own. As a phenomenon, robo-advisory is getting to be quite well-known in the U.S. and partially due to this fact the playing field is becoming increasingly saturated.

According to my research, it would seem that the interest to expand onto other continents, such as Europe, is very limited for American robo-advisors. There are mainly two reasons for this; the U.S. advisory market is huge in itself, and firms are not too keen on investing in the multi-currency capabilities required to conduct transactions between continents (as stated by Grace Warrick of Schwab in Appendix 1). Whether or not we will see truly global robo-advisors in the future is uncertain to say the least. This is due to the fact that even though a certain market, e.g. in the U.S., was to become fully saturated, it would require heavy investments to expand abroad to Europe for example, because of the differences in currency, regulations and legislation.

When it comes to the robo-advisors operating in the European markets, they are quite a bit smaller than their U.S. counterparts. However, there is growth and movement even in Europe, and regulations and directives such as MiFIR and MiFID are helping to

pave the way for robo-advisory on this side of the pond as well. If regulations and legislation in Europe continues to become increasingly uniform, the European market will start to resemble that of the U.S., where players can intercompete in a federation-wide market.

The beginning of expansion over geographical boundaries has already started, as the case of MoneyFarm's U.K. expedition demonstrates. If the campaign turns out to be a successful conquest, it is likely that other European robo-advisor companies will follow in their footsteps. As mentioned in chapter 8, players like vaamo are already oriented towards an international approach, but they have not yet deemed the time to be right. With every new directive and/or regulation aimed at balancing financial markets and harmonizing requirements between member states the move over a state border in hopes of increasing AUM, customer base and profits becomes more and more tempting.

As for my research questions, I feel that the most significant factor influencing robo-advisors' decisions regarding the Nordic markets is ease of entry and perceived potential. As stated in the previous chapter, ease of entry is becoming less and less of a problem with the European Union proactively attempting to tear down walls and boundaries prohibiting trade and free movement of capital. This makes perceived market potential the number one factor when a robo-advisor company is considering the move into e.g. the Finnish market. In said Finnish market there only seems to be one significant player in the robo-advisory field, Evli's Verkkopankkiiri. Therefore it is very likely that the market segment for robo-advisors is not too saturated and there should be room for more players. The same can be said for Sweden, with only two robo-advisor companies, Tieless and Primepilot, which are in the spotlight. With the collective Swedish robo-advisor AUM of just under 224 million USD and the collective Finnish robo-advisor AUM of just under 33 million USD as mentioned in chapter 8.1, the robo-advisor segments in both countries are quite small for now. Other Northern European countries also seem to have some robo-advisor activity, but it truly is very limited on a global scale.

In light of the information stated in the previous paragraphs, when it comes to international robo-advisor platforms entering the Finnish market, I believe that the most likely candidates are the Swedish companies Tieless and Primepilot (who have already expressed their interest via their CEO Ulf Ahrner in an interview with Kauppalehti).

Larger European companies like vaamo and MoneyFarm seem to have their sights set on larger markets, with vaamo focusing on the German market for now and MoneyFarm making the move from Italy to the United Kingdom. This indicates a lack of interest in entering financial markets with a smaller segment of robo-advisory for service providers with an established customer base and a more significant AUM number. Other Nordic players might also feel that they are familiar with the Northern European mindset and world view, which can at times be quite different from that of Central Europe. However (as mentioned in chapter 8.1), Saxo Bank has rolled out their own platform in co-operation with BlackRock. This could be seen as a definitive sign of perceived market potential in Nordic countries. Even though the service has not been launched or even widely marketed in Finland, it is likely that SaxoSelect will become a part of the robo-advisor offering here as well.

The same applies for my second research question. If the client were to develop and launch a robo-advisor platform and decided to take it abroad, I feel that the best bet would be to go to Estonia, Sweden or maybe Norway. Estonia is also a very tech-oriented country with e-citizenship etc. and the robo-advisor market seems to currently be very small or even close to non-existent. Taking the platform to a country like Germany, the United Kingdom, France or Italy where there are several larger players controlling a significant share of the market might be biting off a bit more than is sensible. Obviously if the initial over-the-border conquest goes well, making a move to these more substantial markets might become relevant in the future.

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E-mail correspondence with Grace Warrick of Schwab

From: Warrick, Grace [Grace.Warrick@Schwab.com]
Sent: Thursday, May 05, 2016 1:44 AM
To: Jere Rättyä
Cc: SFO, Investor Relations; Fowler, Richard
Subject: RE: Questions for Bachelor's Thesis

Hi Jere,

See answers embedded in your original text below. Please let me know if I can help with anything further. Thanks!

Grace

From: Jere Rättyä [mailto:Jere.Rattya@metropolia.fi]
Sent: Tuesday, May 3, 2016 12:46 AM
To: Warrick, Grace
Subject: RE: Questions for Bachelor's Thesis

Hello Grace,

thank you in advance, I look forward to hearing from you!

Br,
Jere

From: Warrick, Grace [Grace.Warrick@Schwab.com]
Sent: Monday, May 02, 2016 11:40 PM
To: Jere Rättyä
Subject: FW: Questions for Bachelor's Thesis

Hi Jere,

I work in Investor Relations at Charles Schwab. I am gathering the answers to your questions and will send them over as soon as possible. Thanks for your patience.

Grace

_____

Grace Warrick
Manager | Investor Relations

Tel 415.667.9786
211 Main Street, 16th floor
San Francisco, CA 94105

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NOTICE: All email sent to or from the Charles Schwab corporate email system is subject to archiving, monitoring and/or review by Schwab personnel.

From: SFO, Investor Relations
Sent: Thursday, April 28, 2016 9:57 AM
To: Fowler, Richard
Cc: SFO, Investor Relations
Subject: FW: Questions for Bachelor's Thesis

From: Jere Rättyä [[UrlBlockedError.aspx]mailto:Jere.Rattya@metropolia.fi]
Sent: Thursday, April 28, 2016 9:16 AM
To: SFO, Investor Relations
Subject: Questions for Bachelor's Thesis

Greetings!

I'm not sure if this is the correct contact address for this, but I'm a Finnish BBA student, writing my bachelor's thesis on the topic of robo-advsisors and their growth. It would be very helpful to me if I could get answers to a couple of questions relating to the theory section of my thesis. They are as follows:

What is the current AUM number for Schwab Intelligent Portfolios?

Schwab Intelligent Portfolios and Institutional Intelligent Portfolios had $6.6 billion in AUM as of 3/31/2016. Schwab Intelligent Portfolios currently makes up the vast majority of AUM.

Approximately how many clients does Schwab's robo-advisor have?

Approximately 73,000 accounts across SIP and IIP, as of 3/31/2016.

Of the AUM and current clients, what percentage were existing clients, in comparison to clients that have come to you solely for the robot-advisor platform?

Approximately 80% of accounts are being opened by existing clients, and this proportion is shrinking (as the proportion of new client account openings is growing). About 2/3rds of assets are from existing clients (and the other 1/3rd from new clients).

Is it likely that Schwab will expand their robo-advisors reach beyond the United States? If not, why?

We don't currently have plans to expand this offering internationally. At this time we only have the registration to sell securities in countries where we're already established. We also lack multi-currency capabilities ideal for serving international clients. Schwab Intelligent Portfolios has a solid runway for growth in the US, so we are focused on the domestic market and may consider these regulatory/capability investments later on.

Thank you very much for your help in advance!

Best regards,
Jere Rättyä
Student in International Business and Logistics '11
Metropolia University of Applied Sciences

Notes from telephone interview with Tuomas Majuri of Finanssialan Keskusliitto

miten nykyinen sääntelyjärjestelmä taipuu uusiin konsepteihin?

- viimeisen vuoden aikana ollut Euroopassa paljon pöhinää

- sääntelijät kiinnittävät entistä enemmän huomiota sääntelyyn

- markkinoilla tapahtuu, tänään (17.5.2016) UBS on ostanut amerikkalaisen SigFigin

ESMA on tehnyt "Joint committee discussion paper on automation in financial advice"-konsultaation (laajempi)

brittimarkkinoille tehty Financial advice market review 1.3.2016

uusi iso sääntelyuudistus tulossa EUn sisälle ja ETA-alueelle; direktiivi mifid2/mifir

- vrt baselin puitteet pankkien toiminnalle

- tietyt toimilupaa edellyttävät sijoituspalvelut, raskas prosessi hakea finanssivalvonnasta

- kun toimilupa on saatu, on oikeus tarjota ym. maissa palvelua

- direktiivi mifid on voimassa jo, suomessa säännellään sijoituspalvelulaissa jossa direktiivi on jo implementoitu suomeen

- mifid2 tulossa 3.1.2018

- Isossa-Britanniassa finanssituotteiden kickbackit kielletty = sijoitusneuvojat ottavat kaiken rahan vain asiakkailta. mahdolliset kickbackit siirrettävä asiakkaan hyväksi. piensijoittajat eivät ole halukkaita maksamaan tätä erotusta.

-> brittimarkkinoille syntynyt advice gap = neuvontavaje

  -> arkipäivää briteissä ja hollannissa, tulossa koko Eurooppaan.eli siis PELKÄSTÄÄN VARAINHOITOPALKKIO tuottaa tulosta palveluntarjoajalle

10-15 vuotta sitten osakesijoittaminen oli suomessa kallista, sitten alkoi tulla online-välittäjiä jotka tarjosivat karvalakkisijoittajille mahdollisuuden käydä osakekauppaa kohtuuhintaan. Varainhoitobisnes tällä hetkellä (täyden valtakirjan/private banking) on herraskaista bisnestä, joka vaatii suuren salkun (100 000-250 000). Tähän väliin robo-advisor tulee tarjoamaan kaikille varainhoitoa (disruptio)

Ei osaa sanoa onko tulossa tai tullut robo-advisoreita markkinoille Suomessa

Vakiintuneista toimijoista Suomessa Evlillä on Evli verkkopankkiiri, joka on vähän robo-advisor-tyyppinen, johon pääsee mukaan pienehköllä salkulla. minimi 30 000 €

Suomessa verotus ohjaa eri tavalla kuin jenkeissä, esim. missä muodossa toimintaa voi harjoittaa. Salkun tai rahaston tasapainotuksesta tulee veroseurausta, luovutusvoiton verotus. Vakuutus tai yhdistelmärahasto edullisempi, voi tasapainottaa ilman veroseuraamuksia. Olisi hyvä olla lainsäädäntö joka mahdollistaisi uudelleentasapainottamisen ilman veroseurauksia jotta robo-advisor-toiminta lähtisi lentoon. Rahaston sisäiset transaktiot ovat vapaita luovutusvoittoverosta.