Small but buzzing: the Austrian fintech ecosystem

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This study aims to enhance transparency on the Austrian fintech industry by collecting first-hand industry data provided by Fintech Austria – the country's largest fintech interest group – and subjecting the data to statistical analysis conducted by the Oesterreichische Nationalbank (OeNB). The analysis of key features of Austrian fintechs across various dimensions reveals that the domestic fintech industry is a small but rapidly growing industry. While being based on a diverse – and increasingly specialized – range of business models, most fintechs still operate in the payments sector. Typically, fintechs are established in larger cities by men who have already pursued a previous career. As a rule, their ownership structures are divided between a broad domestic shareholder base and a more concentrated investor base abroad.

The dynamics in the fintech industry need to be closely monitored. If not identified in a timely manner, strong growth and the tendency of online industries to form oligopolies or monopolies may lead to systemic implications and financial stability risks. Moreover, increasing cooperation between incumbent banks and fintechs as third-party providers may impose outsourcing risks. Should the latter fail, this may have negative spillover effects on the financial sector as a whole. Therefore, it is all the more important that policymakers and market participants alike keep track of the fintech industry's structure and trends. With this in mind, the analysis presented in this study was largely automated to allow for periodic updates and thus continuous monitoring of the Austrian fintech industry in the future.

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Fintech[2] might change the functioning of the financial sector and is therefore relevant from a financial stability perspective. By analyzing key quantitative and structural indicators of the fintech industry, we can track its importance and developments, identify emerging trends early on and assess potential medium- to long-term implications for the financial services industry[3].

Fintech is global in nature. However, it is the national authorities that are responsible for setting up a general framework in their respective jurisdiction for nurturing and overseeing the fintech landscape. Initiatives in this regard include incubators and accelerators that offer vital support, fintech advisory boards that are set up by governments and regulatory sandboxes that are established by supervisory bodies. To tailor these initiatives to maximum effect, it is essential to monitor and track

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[2] *In this study, the term is used to describe both technological innovations ("fintech") as well as firms that use these innovations ("fintechs").*

[3] *It would go beyond the scope of this paper to assess potential societal implications arising from new technologies such as artificial intelligence or crypto assets.*

national fintech ecosystems in as much detail as possible. This is what the present study sets out to do.

The paper is structured as follows: In section 1, we outline the aim of the study in more detail. Section 2 describes the data and methodology used, before section 3 discusses the main findings obtained from the data. Finally, section 4 concludes and suggests possible routes for future studies in this field.

1 Objectives of the study

Our study focuses on the Austrian fintech ecosystem which consists of start-ups and small and medium-sized enterprises (SMEs) established and operating in Austria. Our study excludes (1) fintechs that are established in other countries but operate in Austria, (2) incumbent banks[4] that launch fintech and digitalization initiatives and (3) large technology firms, which are often referred to as bigtechs, such as Apple, Google, Amazon or their Asian equivalents. While numerous papers describe selected individual features of the fintech industry, we know of only a few studies that provide quantitative analyses across multiple dimensions. A notable example in this respect is the study by Dorfleitner et al. (2016), who investigate the German fintech market. As far as Austria is concerned, the present study is – to our knowledge – the first to look at the national fintech landscape from a quantitative perspective.

With this aim in mind, the Oesterreichische Nationalbank (OeNB) joined forces with Fintech Austria – the country's largest fintech interest group – to produce this study. While Fintech Austria provides in-depth knowledge of the industry and its participants, the OeNB's access to several statistical systems as well as its analysis and data manipulation capabilities allow for the investigation of key firm characteristics. Moreover, given its broader financial stability mandate, the OeNB has a keen interest in monitoring current developments in the financial sector. Therefore, this study also aims to provide a common ground for better understanding the Austrian fintech ecosystem.

To be able to consistently track the development of Austria's fintech industry over time, we put great effort into ensuring that the analysis presented in this study can be updated with a minimum of effort. We expect this high degree of automation to pay off in future iterations of this analysis.

2 Selection of data sources and firms

The term fintech is not clearly defined. What all definitions have in common, however, is that fintech has to do with technology and finance. Yet, whether or not a specific firm may be classified as a fintech is sometimes arguable. NACE codes[5] and other existing classification systems are of little help in this regard since they do not consider the underlying technology used by firms or other more specialized indicators to adequately distinguish between fintechs and non-fintechs. Even though there are efforts to refine existing classification systems in upcoming

[4] *The term "incumbent" refers to traditional financial service providers, mostly banks. Incumbents may also offer fintech services and products. Firms that base most or all of their business on fintech, by contrast, are referred to as fintechs. These are mostly small start-ups, even though some firms have already matured and exited the start-up phase.*

[5] *NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) is the statistical classification of economic activities in the EU. NACE groups organizations according to their business activities.*

revisions[6], we decided to base our definition of the Austrian fintech ecosystem on a different data source, namely on the FinTech Directory Austria (FDA)[7].

The FDA, which is compiled and periodically updated by Fintech Austria, lists all Austrian start-ups and SMEs that qualify as fintechs and classifies them according to their business models. Such a classification is, of course, always somewhat qualitative and blurry. However, we consider this qualitative assessment to be a strength as the main features differentiating fintechs from non-fintechs can only be identified by an in-depth understanding of the individual firm. The main features include the innovativeness and technology proneness of the firm's business model as well as the firm's corporate culture and the mindset of its staff members and management. Based on similar reasoning, we took over the classification of the fintechs' business models as proposed by the FDA as it provides a more stringent delineation of the fintech subsectors than that proposed by the NACE codes.

Based on the FDA's classification, we gathered data on the respective firms from different databases to identify the firms' key characteristics. Most of the data were drawn from Austria's Commercial Register. We then enriched the data with information on individual balance sheet items drawn directly from the firms' balance sheet statements in the Commercial Register. All data thus obtained were subsequently converted into machine-readable data.

While being the best obtainable data on Austria's fintech industry, the information gathered still has some shortcomings. First, not all data are available for all firms. While core data such as the firms' address or legal status could be obtained for all 112 firms[8], detailed balance sheet data were only available for about two-thirds, i.e. 72 firms. Second, balance sheet information shows some lag[9], with turnover and staff figures only being available for about half of the firms.

Our study is mainly based on medians instead of means to minimize the impact of outliers on the results of the analysis. Moreover, for some parts of the analysis, we had to confine ourselves to subsamples of firms.

3 Key findings on the Austrian fintech market

3.1 Austria's fintech market is still relatively small but shows high growth rates

The Austrian fintech industry has an aggregated balance sheet of roughly EUR 110 million, generates an annual turnover of EUR 130 million and employs around 1,000 staff members. To put these figures into perspective: On a national level, the Austrian GDP at current prices came to EUR 385 billion and the Austrian workforce consisted of 4.34 million people in 2018.[10] In other words, the fintech industry currently represents some 0.025% of the Austrian economy. Despite still

[6] *As a case in point, the Irving Fisher Committee of the Bank for International Settlements (BIS) is exploring options how to better delineate fintechs from non-fintechs in its industry classification systems.*

[7] *For more information, see http://austrianfintech.directory/.*

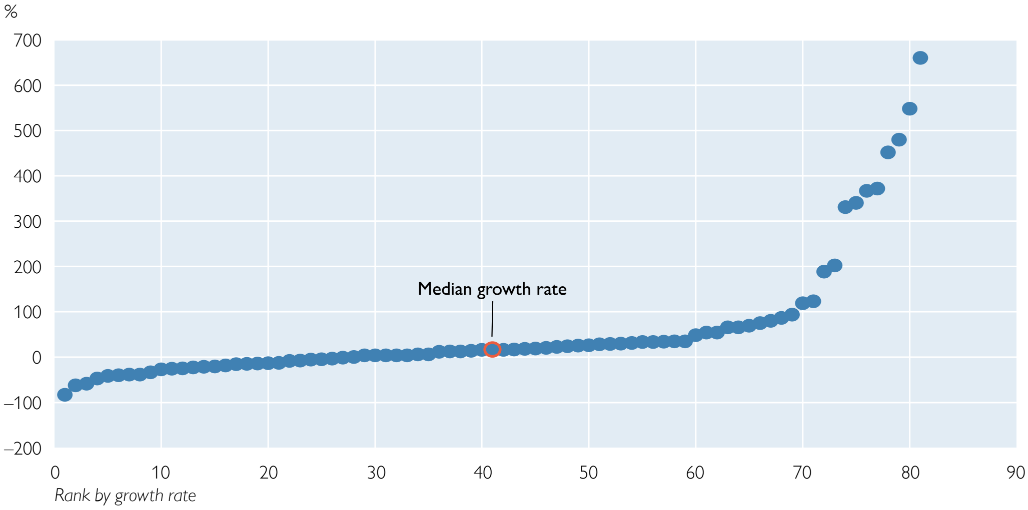
[8] *In fact, the FDA currently comprises 132 undertakings. However, not all of them are included in Austria's Commercial Register for different reasons (not yet established as a firm, in liquidation, established as a research project or non-commercial initiative, etc.).*

[9] *For 30 firms, latest balance sheet data stemmed from 2018, for 41 from 2017 and for 1 from 2016.*

[10] *For more information, see Statistics Austria: https://www.statistik.at/web_de/statistiken/wirtschaft/volkswirtschaftliche_gesamtrechnungen/bruttoinlandsprodukt_und_hauptaggregate/jahresdaten/019505.html (available in German only) and https://www.statistik.at/web_en/statistics/PeopleSociety/labour_market/employed/063359.html.*

Chart 1

Ranking of 81 Austrian fintechs by annual growth rate (2016 to 2018)



Source: OeNB, Fintech Austria, Commercial Register.

being rather small in absolute terms, the fintech industry is highly dynamic, posting growth rates far exceeding those of the financial industry as a whole. As a case in point, the fintechs for which balance sheet data were available from 2016 to 2018 showed a median annual growth rate of 16%. However, as illustrated in chart 1,[11] their growth rates are highly skewed to the right with an average growth rate of even 60%.

The median fintech has a balance sheet size of EUR 350,000, a turnover of EUR 650,000 and a workforce of six staff members. Respective averages are three to four times higher across all dimensions, indicating that the sample is highly skewed to the right with some large outliers.[12]

3.2 Austrian fintechs are mostly concentrated in Vienna

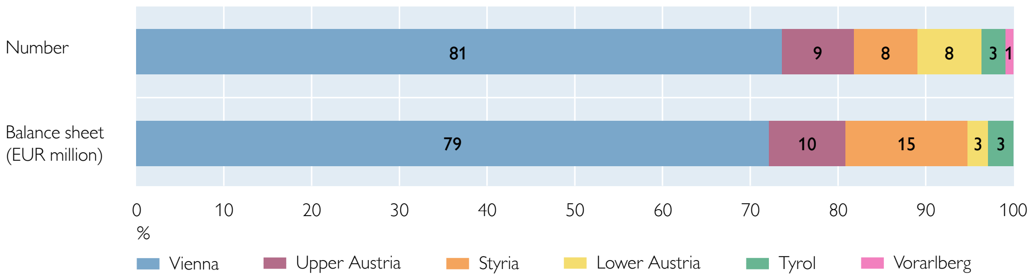
Three-quarters of the aggregated balance sheet of Austria's fintech industry are held by Vienna-based firms (see chart 2). This indicates that even among tech-savvy internet users innovation happens in geographical clusters. Vibrant innovation ecosystems require a community of a critical scale and social interaction as illustrated by, e.g., Breschi and Lissoni (2006). Moreover, bigger cities are better equipped to provide supporting infrastructure such as accelerators and incubators.

[11] *Note that outliers with growth rates well above 1,000% were excluded from the analysis and are therefore not shown in the chart.*

[12] *15 firms have a balance sheet size of more than EUR 1 million. A closer look at the data reveals that the largest firm alone accounts for about 10% of the industry's turnover and for about 15% of the aggregated balance sheet size.*

Chart 2

Geographical breakdown of Austrian fintechs



Source: OeNB, Fintech Austria, Commercial Register.

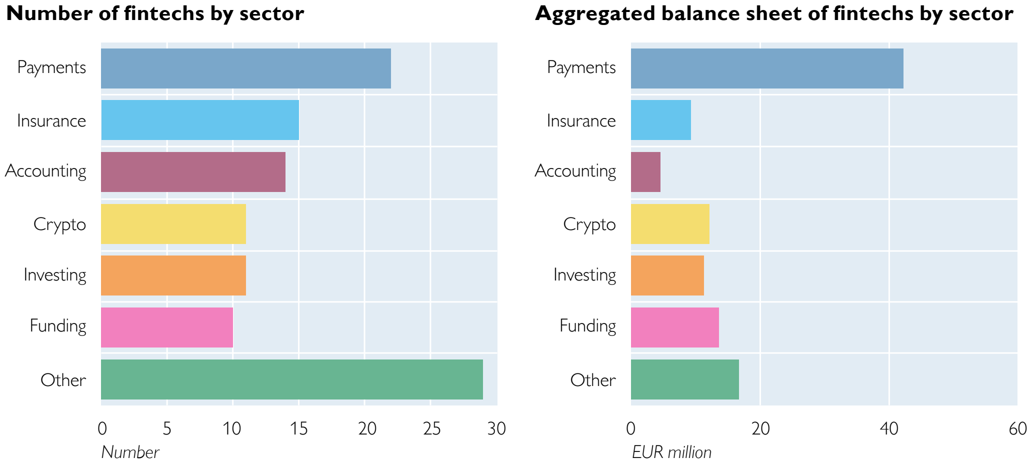
3.3 Despite a recent surge in more specialized business models, payments is still the largest sector

The FDA classifies the Austrian fintech industry into seven key sectors, each containing at least four firms. As shown in chart 3, the sector with the highest number of firms[13] – payments – represents one-fifth of Austria's fintechs. This sector is characterized by disproportionately large firms that account for about one-third of the fintech industry's aggregated balance sheet size, turnover and workforce.

The median fintech was founded some five years ago. A breakdown of newly established fintechs by sector over time reveals that the founding rates of firms operating in the payments and accounting sectors have remained relatively stable over time (see chart 4). At the same time, the last five years have seen a burst of activity in the crypto and insurance sectors, in particular, as well as a wealth of highly specialized business models that are subsumed under the sector "other."

Chart 3

Sectoral breakdown of Austrian fintechs



Source: OeNB, Fintech Austria, Commercial Register.

[13] *A total of 29 firms falls into the category "other." However, since these firms operate in various subsectors, the category "other" may not be considered to be the largest sector.*

Box 1

Recent developments in the Austrian fintech ecosystem

While the payments sector continues to be the largest sector, other areas have shown growth trends recently, in particular lending, (non-crypto-based) funding and accounting as well as investment management and personal finance.[14] *In this context, it is also worth mentioning that one of the by now largest firms in the field of regulatory technology is based in Austria.*

Most Austrian fintechs have business models that do not fall within the regulatory perimeter. However, as these firms extend the breadth and depth of their offerings, regulatory demands increase. As a result, some fintechs aim to offer services on a standalone basis and thus abandon previously existing cooperations with licensed partners that ensured regulatory compliance under their umbrella.

By contrast, other fintechs increasingly cooperate with each other and with established financial institutions in selected niche markets, complementing each other's businesses in these areas. This trend can be observed across Europe.

All in all, Austria's fintech industry is likely to see some consolidation in the future, with a few strong players with sound business models emerging – be it on a standalone basis or in cooperation with larger platforms.

3.4 Austria's fintechs are typically founded by middle-aged men

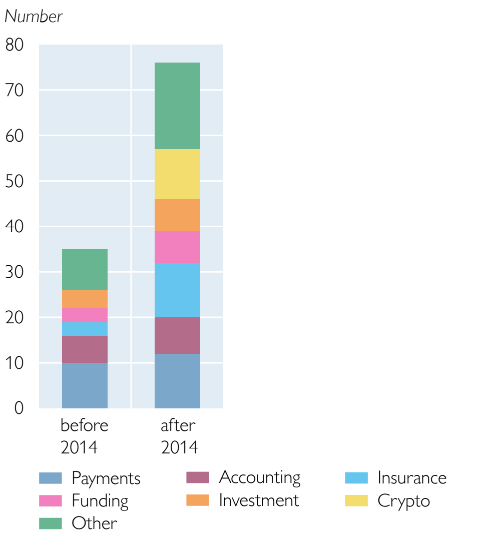
The predominant legal form for fintechs is a firm with limited liability (GmbH) which accounts for 91% of all fintechs in Austria. This business form is best suited to limit the financial fallout for founders should their business idea fail.

Management is male-dominated, with 92% of all managing directors being men. The median age of fintech founders when starting out is 38 years, which indicates that they have, in general, already pursued a career prior to founding their business.

This finding is in line with those of, e.g., Azoulay et al. (2018) who show that successful founders of high-growth tech firms in the U.S.A. tend to be middle-aged men in their 40s, which contrasts with the common myth of the start-up *wunderkinder*. 13% of Austrian fintechs have a supervisory board whose members have a median age of 46.

Chart 4

Number of newly established fintechs in Austria by sector over time



Source: OeNB, Fintech Austria, Commercial Register.

[14] *Some of these areas are subsumed under the sector "other" in chart 4.*

3.5 Austrian fintechs have a diversified ownership structure and benefit from substantial foreign investment

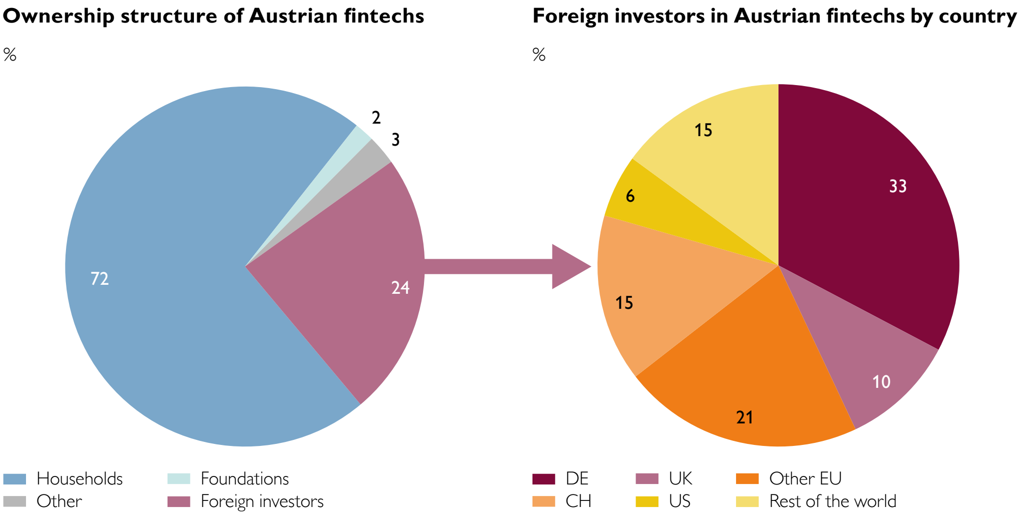
In Austria, ownership of fintechs is typically divided between three ultimate owners[15] (median of the distribution of the number of ultimate owners). Only 32 ultimate owners have investments in more than one fintech (25 owners invest in 2 firms, 7 owners in 3). Three-quarters of investors in Austrian fintechs are domestic natural persons (see chart 5). Foreign investors are located, one-third each, in Germany, other EU countries and outside the EU.

In terms of total assets, the majority of the fintech sector is owned by foreign investors, followed by domestic natural persons. A small share belongs to Austrian foundations or other organizations for which the ultimate owner could not be identified. Almost one-half of foreign investments stems from the U.K., about one-quarter from Germany and one-sixth from the U.S.A. (see chart 6). The remaining investments come predominantly from other EU Member States.

As is evident in charts 5 and 6, domestic investments dominate in terms of numbers but not in terms of investment volume, which indicates that the domestic investor base is quite granular. At the same time, there are a few large funding providers from abroad.

Chart 5

Breakdown of fintechs' investor base by number of investors

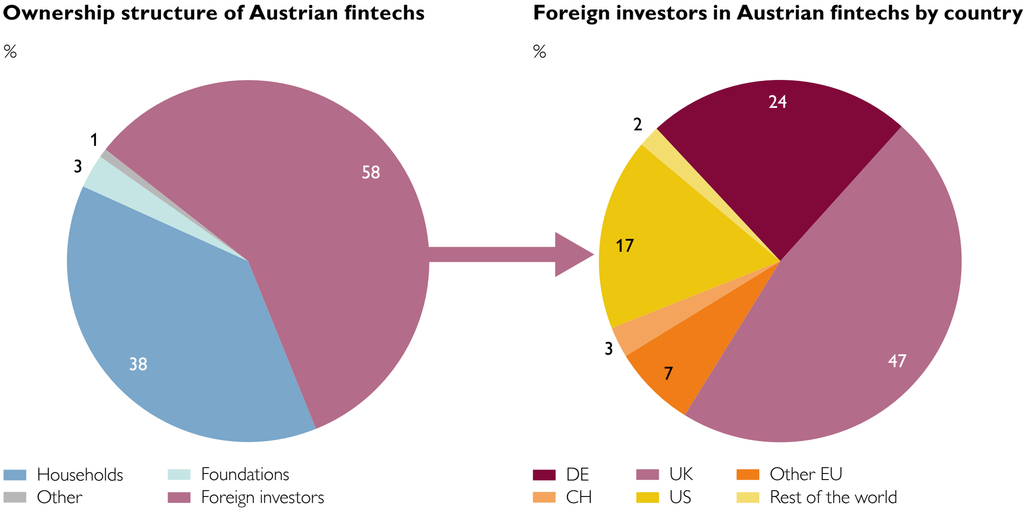


Source: OeNB, Fintech Austria, Commercial Register.

[15] *The owners of fintechs may be firms which, in turn, may be owned by other firms. This can lead to very complex ownership structures, masking who is actually in control. Based on data reported to the OeNB, we generated a list of ultimate owners (i.e. of owners for which no further owner could be identified such as natural persons, cooperatives, foundations or firms abroad) and their consolidated shares in the respective fintech's capital.*

Chart 6

Breakdown of fintechs' investor base by owned assets



Source: OeNB, Fintech Austria, Commercial Register.

3.6 Most of Austria's fintechs are not yet profitable

To analyze balance sheet structures, we first calculate the percentage of each balance sheet component for the firms[16] for which balance sheet data are available[17]. The resulting statistics reveal that Austrian fintechs typically have about ten times as many working assets as fixed assets, which points to a lean corporate structure.[18] This also reflects the fact that fintechs build their infrastructure from scratch and thus typically operate using an asset-light business model. As regards their funding structure, one-quarter of fintechs records negative capital ratios with some extreme outliers. However, the median capital ratio comes to a sound 32%.

A closer look at the OeNB's central credit register suggests that banks do not provide major funding for fintechs. This finding is supported by the banking industry, which highlights the difficulties in rating firms without a rating history and with highly specialized business models that are difficult to understand. We conclude from these findings that the respective fintech's liability side mostly comprises shareholders' loans and, potentially, money provided by business agencies.

Considering balance sheet profitability[19] in more detail reveals that around two-thirds of Austrian fintechs are still unprofitable. While there are profitable fintechs across all sectors in which they operate, the fintechs for which detailed balance sheet data are available report a median return on assets of –40%. For this subsample of firms, we moreover identified an aggregated loss of around EUR 20 million (i.e. profits of EUR 5 million versus losses of some EUR 25 million). Yet, balance sheet

[16] *Of the 112 firms listed in the FDA, we were able to obtain data on balance sheet size for 86 firms. Of these, 72 firms provided additional detailed data on balance sheet components, including information on profitability.*

[17] *As a rule, the fintechs' balance sheet is split up into the following key components: asset side = fixed assets, working assets, accruals and deferred income; liability side = capital, borrowed funding and accrued liabilities.*

[18] *As indicated by the median of the distribution of the fintechs' ratio of working assets to fixed assets.*

[19] *Balance sheet gains and losses are subcomponents of the firm's capital.*

data for some large firms are missing in this analysis. Had they been available, this might have given a different picture of the fintech industry as a whole.

4 Conclusions and next steps

By looking into descriptive statistics of Austria's fintech industry, the present analysis provides a comprehensive overview of important aspects of the domestic fintech ecosystem. While the latter is still rather small, it grows at a much faster pace than the rest of the economy does. Furthermore, Austrian fintechs are concentrated in the country's larger cities and are based on a diversified range of business models that become increasingly specialized. There has been a recent surge in newly established firms, founded mostly by middle-aged men that have already acquired some industry experience. Capital comes, on the one hand, from a diversified domestic investor base and, on the other hand, from a few large funding providers abroad. Investments are typically made in larger fintechs, which account for more than one-half of all fintechs in terms of balance sheet size. Median capital ratios are sound but there is a substantial share of negative outliers. Overall, Austria's fintech industry still seems to be unprofitable, except for some notable exceptions across all sectors.

While the fintech industry is not yet of paramount importance for the Austrian economy, its underlying dynamics warrant close monitoring to identify potential financial stability implications early on. In this context, interactions between the fintech industry and the banking sector also play a role. On the downside, if fintechs become important third-party providers for incumbent banks, their failure could have spillover effects on the established financial sector. On the upside, fintechs can contribute to efficiency, transparency and resilience of, as well as competition within, the financial system (see FSB, 2017 and 2019). In this respect, timeliness of monitoring is crucial as suggested by the rapid growth of internet-based service providers. Moreover, we expect fintechs that provide third-party services for incumbent banks and insurance companies as well as "neobanks" such as N26, Revolut and Monzo to become increasingly important. This is evidenced by the fact that the neobanks' customer base has grown from virtually zero to several million over the past two years. Other industries also show tendencies to grow rapidly and become near-monopolies in the future (e.g., Airbnb, Spotify and Uber).

In addition to periodic updates of the analysis discussed in this study, there are several further routes one could take to shed light on additional aspects of the fintech industry. First, the scope of the study could be broadened by including information on digitalization initiatives of both domestic banks and international players in Austria[20]. This would complete the picture of the fintech market's size and dynamics in Austria. Constraints arising from data on international players could be addressed by aligning domestic methodological approaches with those adopted by authorities in other jurisdictions. While a global picture of the fintech landscape might be hard to get, one could aim to provide at least a regional picture (e.g. of the DACH region, which consists of Germany, Austria and Switzerland, or of the Central, Eastern and Southeastern European (CESEE) region).[21] Second, the analysis itself could be

[20] *While regulatory reporting data provide at least some information on the digitalization initiatives of incumbent banks, it is very difficult to obtain figures on international players since they typically do not report their activities separately for Austria.*

[21] *One could, e.g., use the services of fintechs that supply information on firms across jurisdictions in a harmonized way.*

broadened by tracking, e.g., key performance indicators of individual firms over time, which would allow us to depict typical evolution paths of fintechs. This would help predict future sector developments and identify changing sector needs as the fintech industry matures. Moreover, a more detailed breakdown of firm profitability over time and by sector could further enhance our understanding of the typical trajectory firms pursue as they evolve over time.[22]

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[22] *Setting up such an analysis would require further methodological considerations to eliminate the survivor bias: Of the firms that were founded more than ten years ago, our current data only include those that have survived based on a more or less viable business model. However, our data do not include firms that have exited the market in the meantime.*