Fintech and statistics – the challenge of classifying something that hasn't existed before[127]

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Abstract

This paper collects ideas on how to adapt classification systems for activities and products to the advent of "fintech" firms and their position in the financial system. Such a discussion is of concern for the upcoming revision of ISIC and NACE and is also highly relevant for the national accounts. A theoretical discourse on the classification of fintech activities is augmented by an empirical study on the official statistical sector classification of fintech firms in Germany according to the currently valid standards. There are three key findings. First, it will not be possible to base statistical classification on the definition of "fintech" currently used in the literature. The reason for this is that the two descriptors "innovative" and "technology" are absolutely essential for the common definitions of the term "fintech". These concepts are not time-invariant. Thus, a firm that is "fintech" now may not be "fintech" ten years from now if it continues to provide the same services. Second, using a sample of companies identified as "fintech" in a study for the German Ministry of Finance reveals that most of them are not classified as financial companies according to current standards. Third, in order to enable statistics to register and map financial activity in the economy, one useful way of doing this is to identify the key processes needed to produce financial services and to classify such activities and products as "financial", irrespective of whether they are provided within a traditional financial institution or for example, in an IT company specialised in one part of the financial value chain. This will render statistical measurement immune to outsourcing and specialisation within the financial industry and, at the same time, also make it open to rapid technological progress in the future. Ultimately, to cope with big tech firms, statistical reporting obligations on financial issues should not depend solely on a firm's industry classification.

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Keywords: fintech, bigtech, statistical classification, economic activities, product classification

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What is a fintech?

The financial industry in Europe and worldwide is undergoing rapid transformation, fuelled by digitalisation. Digital credit, payment and investment platforms offer a range of new services that have the potential to challenge the predominant role of banks in retail credit and financial services more generally. The process of granting and managing loans is being disaggregated into a sequence of steps that can be performed by multiple providers independently. A new class of digital assets, known as crypto-assets, has been created. In the future, some of those assets may become potential rivals of central banking money. But their principal technological basis, the distributed ledger technologies, also offer new ways of supporting payment infrastructures, especially on asset markets. These developments have the potential to affect monetary policy transmission, supervision and financial stability.

But "fintech" is not recognised in the official statistics, nor is there any unique characterisation of what "fintech" is outside the world of statistics. After a painstaking search through the entire body of available literature, Schueffel (2016) suggests on the basis of commonalities that "Fintech is a new financial industry that applies technology to improve financial activities". The definition by Mark Carney, the Financial Stability Board (FSB) and the Committee of the Global Financial System at the BIS is similar: fintech "can be broadly defined as technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets, financial institutions and the provision of financial services"[130] These and other definitions have three common features: [131]

- financial services;
- technology;
- innovation.

Definitions along these lines are of limited assistance when it comes to revising classifications in order to help statistics give a better account of fintech activities. The first feature is straightforward. "Financial services" is clear cut and can be made even more operational by specifying "credit-related services", "payment-related services", "investment related services", etc.

The two other elements are difficult to deal with. What is at the *technological edge* today will be commonplace tomorrow – unlike 1970, for example, there is no bank today that does not make heavy use of information and communication technology (ICT). And, by definition, what is *innovative* today will either have disappeared tomorrow, because not all innovations are accepted, or it will be part of the mainstream menu of processes available to financial companies. A firm that is "fintech" now will not be "fintech" ten years from now if it continues to provide exactly the same services as today – or precisely because it does so. Thus, the features "technology" and "innovation" cannot be part of an operational classification system that is supposed to be stable over a significant period of time.

[130] See Carney (2017).The report refers to an earlier speech by Mark Carney, who was the FSB's chair at that time: "The promise of fintech – something new under the sun?", speech at the Deutsche Bundesbank G20 Conference on digitising finance, financial inclusion and financial literacy, Wiesbaden, 25 January 2017. In that speech Carney himself, however, refers back to the FSB.

[131] In addition to the two sources cited above, also see Wolf (2017).

What is really essential, though, is not a fintech sector as such, however it may be conceived. It is relevant to highlight the European Parliament's concern that there is a lack of important information on credit intermediation by non-banks.[132] The major statistical challenge is the following: activities that have always taken place under the umbrella of traditional financial institutions (such as banks, payment providers, investment funds, insurers, etc.) are now migrating to new, sometimes small, companies that are not necessarily part of the existing reporting systems for financial activities. To the extent that this is the case, the time series collected by statisticians are losing their information value, and often there is no complementary information on such new activities.

A study by the European Banking Authority, EBA (2017), presents a sample of 285 European fintech firms in the EU. Competent authorities collected the sample on the basis of the FSB definition above. In the light of what has been said above, it is clear that this is a snapshot of today's firms producing financial services in an innovative way, based on new technological solutions. The sample is by no means random or representative, but it may still be seen as indicative of the total of around 1,500 fintech firms estimated to have existed in the EU by mid-2017. The study uses four broad clusters for fintech activities, which are subsequently defined by giving more detailed breakdowns (see Appendix A):

(A) Credit, deposit, and capital raising services,

(B) Payments, clearing and settlement services;

(C) Investment services/investment management services;

(D) Other financial-related activities.[133]

In around 40% of cases, these firms were not subject to any regulation or registration regime, national or international, or it was not even possible to establish their regulatory status. Only 9% of firms are credit institutions under the Capital Requirements Directive.

It is hard for statisticians to come up with suggestions for what needs to be measured. Suggestions of this kind ultimately have to originate from statistical users engaged in economic, financial, political or supervisory activities. Fortunately, with regard to the question at hand, this may not be necessary in the first place. To a large extent, we already know what should be measured. In most cases, fintech firms are part of a value chain that leads to well-known final products or groups of products such as loans, insurance policies, payment services, etc. With the notable exception of crypto-assets, the essential contribution of fintech companies is their use of new technological approaches to gather, process, and disseminate information, and provide services -- either to other companies or to end-users -- on the market as links in the financial value chain. Many of these services used to be performed under the roof of a traditional financial institution. Often, standard banking services such as managing accounts, credit cards, consumer credit or business loans are offered, but using new delivery channels.[134] Fintech is indeed mostly about processes and the exchange of intermediate services, not about final products. The new technologies significantly roll back the frontier between what needs to be provided within a firm in

[132] Within the IFC Working Group on Fintech Data, this concern is emphasised by the work stream on financial stability issues.

[133] Regtech, Insurtech and Proptech may be added as additional fields worthy of consideration.

[134] One prominent example is N 26, a German bank offering its services in 24 countries.

an organised division of labour and what can be traded over the market. If statisticians continue to rely on reports from traditional financial institutions, they run the risk of surveying half-empty shells and failing to identify the most important dynamics.

Fintech in current classification systems

There are two statistical classification systems which are relevant for guiding statistical activity concerning companies. One of these is the grouping of *economic activities*. The existing national and supra-national classification systems for *economic activities* derive from the International Standard Industrial Classification of All Economic Activities (ISIC), maintained by the United Nations (UN), currently in its fourth revision dating from 2008.[135] Routinely, the ISIC or some system consistent with the ISIC is used for *classifying entire firms*. For example, the German Classification of Economic Activities (*Klassifikation der Wirtschaftszweige,* WZ 2008) is based on the European NACE Rev. 2,[136] which, in turn, is derived from the ISIC. The process of revising NACE Rev. 2 was just started in 2019. But while WZ and NACE are mostly used as tools for classifying companies or other statistical units, the ISIC is essentially a classification of activities. When thinking about fintech, it is important to keep in mind that this is not really the same thing. Firms are classified by assigning them to a sector characterised by their *most important activity*. This is hard to measure in practice and will inevitably lack precision. Often, there will be more than one activity, and the relative weights of these activities may shift over time. This issue takes centre stage where "bigtech" firms are concerned, ie large conglomerates that are making inroads into the provision of financial services. How to deal, for example, with the present and future fintech activities of Google?

The other major classification system provides categories for the classification of *products* in an effort to induce structure to the world of output. Again, the blueprint for national and supranational systems is maintained by the UN, the Central Product Classification (CPC), currently in its version 2.1 of 2015.[137] Although it is generally not possible to establish a one-to-one correspondence between activities and products, there is a close relationship between the ISIC classification of activities and the CPC. A table outlining this relationship may be found in the Annex to the CPC.

To understand where the activities of fintech firms are allocated in the current classification systems, let us look at the classification decisions of the German Federal Statistical Office (Destatis) for 248 out of a group of 433 firms identified as fintech firms by Dorfleitner et al (2017), a major independent report commissioned by the

[135] United Nations (2008).

[136] NACE - Statistical Classification of Economic Activities in the European Community (*Nomenclature Statistique des Activités Économiques dans la Communauté Européenne).*

[137] United Nations (2015).

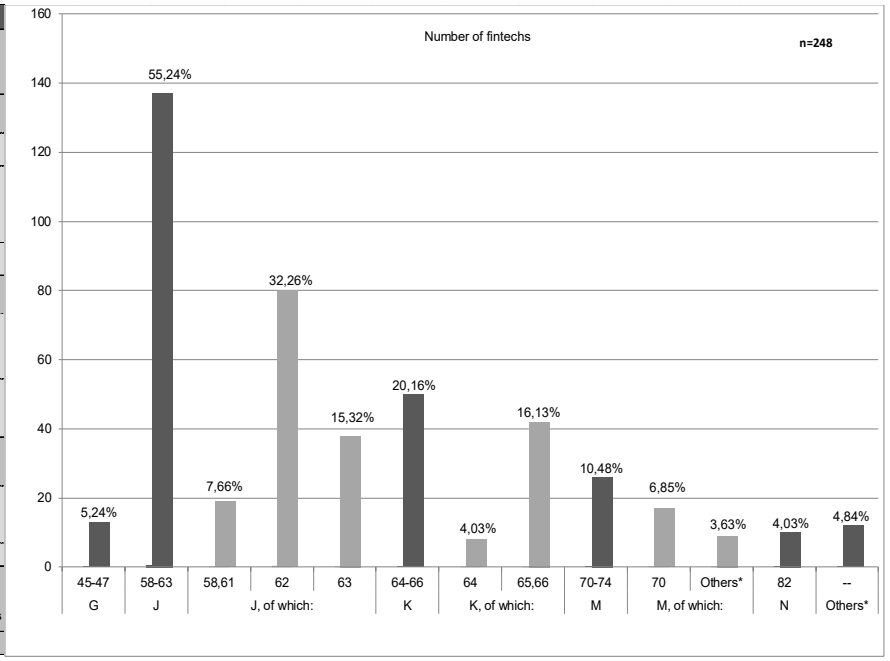
German Ministry of Finance.[138, 139] Like the EBA sample mentioned above, this is a snapshot of "fintech" at a given point of time.

Number of firms in German fintech sample

by ISIC section or division — Graph 1

ISIC Section	ISIC Division(s)	Description
G	**45-47**	**Wholesale and retail trade; repair of motor vehicles and motorcycles**
J	**58-63**	**Information and communication**
J, of which:	58	Publishing activities
	61-62	61 - Telecommunications 62 - Computer programming, consultancy and related activities
	63	Information service activities
K	**64-66**	**Financial and insurance activities**
K, of which:	64	64 - Financial service activities, (…) 65 - Insurance, reinsurance and (…)
	65,66	Activities auxiliary to financial service and insurance activities
M	**70-74**	**Professional, scientific and technical activities**
M, of which:	70	Activities of head offices; management consultancy activities
	Others*	--
N	**82**	**Office administrative, office support and other business support activities**
Others*	**--**	

*Could not be disclosed due to confidentiality constraints



Source: Authors' elaboration.

138 The study of Dorfleitner et al looks at fintechs active in the years from 2007 to 2015. The mapping in this paper is based on a name search of the 2016 edition of the Statistical Business Register. Hence, there is a survivorship bias, because a number of fintech firms may have already been closed down or disappeared by merger and acquisition. Other firms may have changed their name or been added to the register only with some delay. In some cases, the same firm is represented with more than one activity in the database of Dorfleitner et al. A very recent study on the Austrian fintech industry may help also to throw some light on the structure of fintechs in Germany; see OeNB (2019).

139 An update of this study is forthcoming in July 2020. It documents a strong increase of activity level of fintechs in Germany in recent years, see Dorfleitner et al (2020).

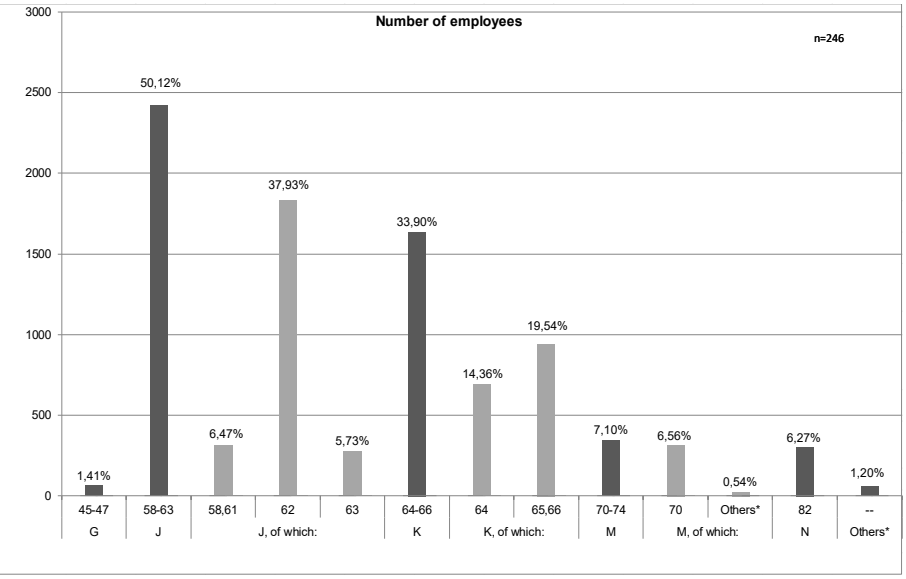
Number of employees in German fintech sample

by ISIC section or division

Graph 2

ISIC Section	ISIC Division(s)	Description
G	**45-47**	**Wholesale and retail trade; repair of motor vehicles and motorcycles**
J	**58-63**	**Information and communication**
J, of which:	58,61	58 - Publshing activities 61 - Telecommunications
	62	Computer programming, consultancy and related activities
	63	Information service activities
K	**64-66**	**Financial and insurance activities**
K, of which:	64	64 - Financial service activities, (…)
	65,66	Activities auxiliary to financial service and insurance activities 65 - Insurance, reinsurance and (…)
M	**70-74**	**Professional, scientific and technical activities**
M, of which:	70	Activities of head offices; management consultancy activities
	Others*	--
N	**82**	**Office administrative, office support and other business support activities**
Others*	**--**	

*Could not be disclosed due to confidentiality constraints



Source: Authors' elaboration.

In the business register of Destatis, Germany's national statistical institute, the firms identified as fintech firms are allocated to a wide range of economic activities. Graph 1 and Table 1 in Appendix B show the ISIC classification in the business register. On a two-digit level, the largest number of firms, 32.3%, are classified in ISIC division 62, *Computer programming, consultancy and related activity*. The second largest group (albeit only 16.1%!) are placed in division 66, *Activities auxiliary to financial services and insurance activities,* immediately followed by those in division 63 *Information service activities*. In total, only 20.2% of enterprises are placed in section K, Financial and insurance activities. As those companies are relatively large, the picture is somewhat more advantageous if one considers the distribution according to number of employees in Graph 2.[140] One third, or rather 33.9% of the fintech employees in our sample work in an enterprise classified in section K. The tabulation and a graphical representation of the fintech activities of the enterprises that could be identified in the business register are available in Appendix B. Looking at this composition helps to understand the type of problems encountered with the current classification system. Gauthier (2020) obtains a comparable result for fintechs in Canada. He finds that more than half of Canada's fintechs are in NAICS 54C. This sector comprises NAICS 54151 "Computer systems design and related services".[141]

140 In order to do so, it was necessary to make rough estimates of the fintech share in total activities for firms with more than one activity. The study in OeNB (2019) proceeds in the same way. For two firms there was no information on the number of employees in the register.

141 NAICS Canada 2017 Version 1.0 defines industry 54151 as follows: "This industry comprises establishments primarily engaged in providing expertise in the field of information technologies through one or more activities, such as writing, modifying, testing and supporting software to meet the needs of a particular customer, including custom video game design and development and

To round out this information, we sent a direct enquiry to Destatis regarding the current classification of two prototypical fintech activities: the trading of crypto-assets and credit platforms that serve as intermediaries between lenders and borrowers. In the EU, following the decision of a Eurostat committee on classification issues in 2012, the trading of crypto-assets such as Bitcoin is assigned to class 8299 *Other business support service activities n.e.c.* Credit platforms are grouped into class 6619, *Other activities auxiliary to financial service activities,* as the relevant corresponding product classification CPC 71599 explicitly covers the services of credit intermediaries.[142]

National Accounts

The discussion on classification issues regarding fintech is also highly relevant also for national accounts There are two different aggregations of the economic activities of firms in national accounts: one according to *industries* (System of National Accounts (SNA) 2008[143] Section 5.E and European System of Accounts (ESA) 2010[144] 2.150), the other according to *institutional sectors (*SNA 2008 Ch. 4, ESA 2010 Ch. 2). Industries are defined directly on the basis of ISIC or NACE classification of establishments. Institutional sectors, for their part, are high-level aggregates of institutional units, and their definitions are abstract and do not refer explicitly to activity classifications. Hence, a fintech company corporation could, in principle, be part of the financial corporations sector, although – according to ISIC – it is classified in section J. SNA and ESA are silent on how the assignment to institutional sectors is to be performed. As a matter of fact (not of principle), the activity classification of firms is of crucial importance for the assignment of institutional sectors to corporations in the statistical business register. The algorithms used for the assignment of NA sectors in Germany, for example, will not assign firms in section J of ISIC to the ESA sector S.12 (financial corporations).[145] In our sample of German fintech firms, 20.6% are classified in Sector S.12 (financial corporations), the rest, 79.4%, are classified as non-financial corporations or general government entities.

Thus, the classification of fintech activities has direct consequences for national accounts. Hauf (2018) notes the marked decrease in the labour productivity of the German financial sector since the beginning of the century. It is well conceivable that this is because the innovative layers of the German financial industry are selectively missing out. Chaudron (2019) suggests inspecting supply and use table data to analyse the dynamics of the ITC content in the production of financial services.

Steps for revising the existing classification systems

Using the CPC as a starting point, one useful way of approaching a revision could be to proceed as follows:

- Circumscription of areas of interest: What are the broad fields in which the advent of fintech firms might compromise the information value of existing

Internet webpage development; planning and designing computer systems that integrate hardware, software and communication technologies;…".

142 Direct enquiry, communication dated 19.10.2018 by Hartmut Minkel, Destatis.

143 Published as European Commission et al (2009).

144 Published as Eurostat (2013).

145 See Hauf (2018), p.12.

reporting structures for central banks and other agencies? This could result in a list of broader product classes, such as

  - deposit services;
  - credit-granting services;
  - corporate finance and venture capital services;
  - financial transactions services (payments);
  - brokerage and securities services;
  - portfolio management services;
  - pension funds services;
  - insurance services, etc.

- In each of these areas, with the help of specialists, the essential production processes are isolated. In the above-mentioned case of credit-granting services, these could resemble the following list:

  - acquisition of clients;
  - handling credit application;
  - assessing credit risk;
  - pricing new credit contracts;
  - managing credit contracts,
  - managing default, legal services,
  - information management, internal and external accounting,
  - risk management,
  - funding (capital market, deposits, "crowdfunding"), etc.

- The CPC is designed to be complete and exhaustive: each and every product under the sun is supposed to fall into one and only one category. Thus, we can decide how a certain activity or process would be classified today, provided it is offered on the market. We can do this to all processes listed in step 2. This analysis should be augmented by an empirical study of where such activities are currently being grouped, using lists of fintech firms similar to those above.[146] The task is then to make sure that all activities that consist in carrying out the processes listed in step 2 *in the context of producing credit granting services* are recognised and registered as such. Typically (though probably not in each and every case), there will be a category for this kind of service, but not one that is specific to credit granting. In such cases, these services have to be separated from more general types of B2B (business-to-business) services of the same kind: managing a database of credit debtors has to be kept separate from managing other types of databases, say, on human resources. Handling credit applications is to be distinguished from other types of online sales platforms, like those for books. On this basis, new classes and subclasses can be formed, such as "data-base services auxiliary to credit granting".

- Once defined, the new categories can be relocated to Section 7.1. of the CPC, "Financial and related services". Another option would be to use "alternative aggregations" to define inclusive financial sectors and subsectors, such as "credit granting", by aggregating production from different sections, divisions

[146] Studying fintech firms will also help us specify the list of processes in step 2, ensuring that no important stages are overlooked.

and groups. See the Appendix of CPC Version 2.1 for three examples of alternative structures. Alternative aggregations are carried out along the same lines in the ISIC.

Starting from (idealised) stages of generating value added, rather than focusing on shifts in the supply of financial services that are observable today offers a major advantage in an environment characterised by innovation and "disruptive" new technologies: the revised classifications stand a fair chance of providing solutions for the longer run that will make the classification of financial products and activities robust in the course of further evolution.

The procedure proposed in step 3 for defining new subsectors may be called *minimally invasive* if it allows all existing aggregates and time series to be replicated. If the new fintech subsectors are kept separate from each other and not lumped together into one larger aggregate, then the "old" aggregates can be obtained by adding back the newly formed subsectors to their origin, for example to Information services.

Defining new subclasses for the production of financial services is meaningful only if such services are, in fact, financial in character. While maintaining a database on credit histories and evaluating credit risk will arguably be different from running a wedding website or a database of digitalised images, the same will not be true of more general horizontal functions such as the cloud services being used by a financial intermediary, its mobile phone equipment or its "know your customer" (KYC) routines. To put it somewhat drastically: it is not useful to define activities such as "Electric power generation auxiliary to financial services". It is input-output analysis and supply and use tables that deal with supply chains in general.

For the decision to be made in step 4, it is important to look at the consequences for *continuity over time* under both options. Looking at the sectoral classification, reallocating fintechs firms from information services to financial services, say, will create a one-off break in the time series on financial services if it is not possible to calculate appropriate back data according to the new definition. However, after such an adjustment has been made, those larger aggregates will be immune to changes in financial firms' business models, such as outsourcing, mergers and acquisitions, or close cooperation with other fintech firms. It will not be easy to maintain statistical reporting systems on a stable legal footing based on alternative aggregations. If the providers of major services in the financial value chain are not allocated to the same sector as financial firms, they will move in and out of data collection schemes depending on how their business models evolve.

It is vital to stress the fact that the suggested procedure does not need (and indeed will not yield) a definition of "fintech", either explicitly or implicitly, that goes beyond the general concept provided on page 2 above. Instead, this approach aims to ensure that the relevant financial activities and outputs of production processes are registered and monitored, no matter how far the production processes are split across a variety of firms working on the same product closely connected by ICT.

The procedure does not explicitly address the issue of "bigtech" firms (bigtechs) – large conglomerates that are making inroads into the provision for financial services. The issue with bigtechs is not so much the classification systems as such – rather, it is the way they are used when designing statistical processes. Very often, statistical reporting duties depend on the classification of the legal entity as a firm. The financial activities of Google or Amazon will hardly ever be large enough to justify reclassification of the entire group as a provider of financial services. Fintech activities

of bigtechs will then be recorded if and only if these conglomerates provide services through dedicated legal entities, as they will be classified and subjected to regulatory or statistical reporting requirements.[147] Therefore, it might be meaningful to make the creation of such dedicated entities compulsory.

Alternatively, we may ask why reporting obligations should not quite generally depend on the activities of a legal unit rather than on firm classification, ie on whether or not certain activities, such as the production of financial services, take place. This is currently the case for reporting duties in external statistics – provided certain thresholds are met, firms have to report on foreign trade or cross-country financing operations if they are involved in these activities, no matter what industry they are classified in.

[147] Interestingly, some conglomerates create subsidiaries to bundle their financial services activities (eg Google Payment Limited) while others leave them within the main company as a new service (eg Apple with Apple Pay). This may be related to supervisory aspects. It is easier to ring-fence additional reporting requirements by creating a legal entity for them.

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Appendix A: Clusters of fintech activity according to EBA[148]

Financial service type/cluster	Table 1
Credit, deposit, and capital raising services **(Cluster A)**	**A1** Taking deposits; **A2** Taking other repayable funds (ie funds other than deposits); **A3** Lending, including, inter alia, consumer credit, credit agreements relating to immovable property, factoring, with or without recourse, financing of commercial transactions (including forfeiting); **A4** Financial leasing; **A5** Guarantees and commitments; **A6** Credit intermediation under Article 4(5) of Directive 2014/17/EU (MCD); **A7** Money broking; **A8** Any other financial services of a kind within this cluster
Payments, clearing and settlement services **(Cluster B)**	**B1** Provision of payment accounts; **B2** Services enabling cash to be placed on a payment account as well as all the operations required for operating a payment account; **B3** Services enabling cash withdrawals from a payment account as well as all the operations required for operating a payment account; **B4** Execution of direct debits including one-off direct debits; **B5** Execution of payment transactions through a payment card or a similar device; **B6** Execution of credit transfers; **B7** Issuing of payment instruments; **B8** Acquiring of payment transactions; **B9** Money remittance; **B10** Issuing and administering means of payment other than those referred to in Article 4(3) of Directive 2007/64/EU (eg travellers' cheques and bankers' drafts); **B11** Services to initiate payment orders at the request of the payment service user with respect to a payment account held with another payment service provider; **B12** Services to provide consolidated information on one or more payment accounts held by the payment service user with another payment services provider; **B13** Operation of a payment system; **B14** Ancillary services to payment and/or e-money services (Article 16(1)(a) of PSD); **B15** Issuance of e-money; **B16** Distribution of e-money; **B17** Redemption of e-money; **B18** Currency exchange; **B19** Any other financial services of a kind within this cluster.
Investment services/Investment management services **(Cluster C)**	**C1** Trading for own account or for account of customers in any of the items referred to in point 7 of Annex I to Directive 2013/36/EU; **C2** Participation in securities issues and provision of services relating to such issues; **C3** Advice to undertakings on capital structure, industrial strategy etc. (eg as referred to in point 9 of Annex I to Directive 2013/36/EU); **C4** Portfolio management and advice; **C5** Safekeeping and administration of securities; **C6** Safe custody services; **C7** Advisory services (eg under Article 7 of Directive 2014/17/EU); **C8** Any other financial services of a kind within this cluster.
Other financial-related activities **(Cluster D)**	**D1** Credit reference services (eg as referred to in point 13 of Annex I to Directive 2013/36/EU); **D2** Comparison services; **D3** Compliance services related to know your customer/AML; **D4** Compliance services – other; **D5** Any other services of a kind within this cluster.

Source: EBA (2017).

[148] Taken from EBA (2017).

Appendix B: Sectoral classification of fintech firms according to statistical classifications in the business register of the Federal Statistical Office of Germany

ISIC section and division of identified fintech firms

Table 1

ISIC Section	ISIC Division(s)	Description	Number of Fintechs**	As percentage of all found Fintechs	No. of Employees***	As percentage of all employees
G	**45-47**	**Wholesale and retail trade; repair of motor vehicles and motorcycles**	**13**	**5,24%**	**68**	**1,41%**
J	**58-63**	**Information and communication**	**137**	**55,24%**	**2.416**	**50,12%**
J, of which:	58,61	58 - Publshing activities 61 - Telecommunications	19	7,66%	312	6,47%
	62	Computer programming, consultancy and related activities	80	32,26%	1.828	37,93%
	63	Information service activities	38	15,32%	276	5,73%
K	**64-66**	**Financial and insurance activities**	**50**	**20,16%**	**1.634**	**33,90%**
K, of which:	64	64 - Financial service activities, (…)	8	3,23%	692	14,36%
	65,66	Activities auxiliary to financial service and insurance activities 65 - Insurance, reinsurance and (…)	42	16,94%	942	19,54%
M	**70-74**	**Professional, scientific and technical activities**	**26**	**10,48%**	**342**	**7,10%**
M, of which:	70	Activities of head offices; management consultancy activities	17	6,85%	316	6,56%
	Others*	--	9	3,63%	26	0,54%
N	**82**	**Office administrative, office support and other business support activities**	**10**	**4,03%**	**302**	**6,27%**
Others*	**--**		**12**	**4,84%**	**58**	**1,20%**

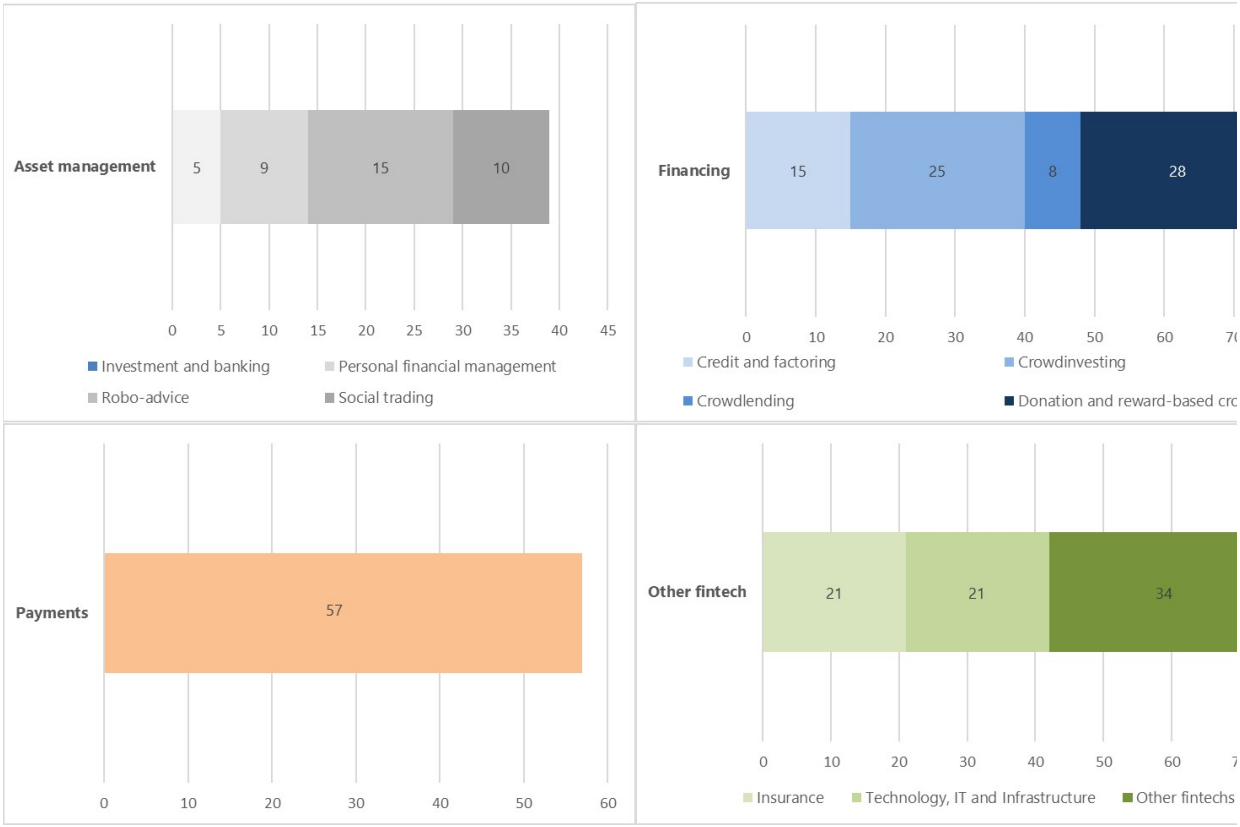
*Could not be disclosed due to confidentiality constraints

** n=248

***n=246

Clusters of activity and subcategories for the German fintech sample

Graph 1



Source: Based on Dorfleitner et al (2017) for the sample of n = 248 fintech firms in Germany.