

# European retail payments market integration and fintech: a case study approach

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*The segment of retail payments has been among the most affected by technology-enabled innovations in financial markets (fintech). This study looks at the digitalization of retail payments markets in Europe. We develop a framework and collect supportive indicators to discuss the connection between fintech and retail payments market developments. We apply our framework to four small European economies – Sweden, Austria, Estonia and Bulgaria – and discuss what conclusions, if any, can be drawn for the integration of European retail payments markets and fintech from the developments observed in the case study countries. While there are many channels through which digitalization may facilitate the creation of a single market for retail payments, this study discusses whether fintech might also contribute to stronger retail payments market fragmentation.*

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Retail payments are an essential aspect of everyday economic life and are frequently reported to be the financial segment most affected by recent financial innovations referred to as fintech (BIS, 2018; EBA, 2017a; CEPS-ECRI, 2017; McKinsey, 2015). The term fintech is defined as technology-enabled innovation in financial services, regardless of the nature or size of the provider of the services. In retail payments fintech comprises, for instance, mobile payments, near field communication (NFC)-enabled cards and cheaper solutions for cross-border money transfers or real-time settlement. While technology-enabled innovations are clearly not a new phenomenon, their speed and diversity has increased over the past years, drawing considerable attention to the topic.

In this study, we develop a simple framework that relates potential drivers of fintech innovations, various examples of fintech and the related structural changes in retail payments markets. By structural changes we mean e.g. shifts in consumers' use of payment methods (cash, cards, fintech innovations) as well as changes in the types of companies that offer payment services (e.g. incumbent<sup>2</sup> banks, telecommunication companies, start-ups).

Ideally, we would apply our framework to all European economies. Given data limitations and the need to collect highly qualitative information, however, we opted for selecting four small European economies to perform exploratory case studies on: Sweden, Austria, Estonia and Bulgaria. While this is only a small subset of European countries with heterogeneous national retail payments market structures, our case studies nonetheless illustrate a series of interesting developments in fintech and payments structures. In Sweden, for example, fintech has accelerated

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<sup>2</sup> The term "incumbent" refers to traditional financial service providers, mostly banks. Incumbents may also offer fintech services and products. Companies 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 companies have already matured and exited the start-up phase.

the decline in cash usage, calling into question the current monetary regime of the central bank, which now considers issuing a digital currency (Ingves, 2018).

Finally, the study discusses potential implications of fintech for retail payments market integration. Theoretically, this issue is ambiguous. The digitalization of retail payment services may foster retail payments market integration by lowering barriers for cross-border sales and cross-border business expansion. It provides many opportunities, e.g. to sell and market financial products online, increases transparency through comparison websites and reduces the need for the extensive and costly physical presence of businesses in the countries of operation (European Commission, 2016). However, given the complexity and speed of fintech developments, they might also increase barriers such as lacking interoperability between providers, consumers and other stakeholders within and across countries and the insufficient harmonization of related rules and regulations (European Commission, 2016). In section 4, we provide some examples that are connected to the case studies and show how fintech might contribute to increasing barriers to retail payments market integration.

The study is structured as follows: Section 1 discusses the methodology employed. Sections 2 and 3 discuss the drivers of fintech, fintech innovations and the related structural changes. Section 4 relates our findings to the issue of retail payments market integration. Section 5 concludes.

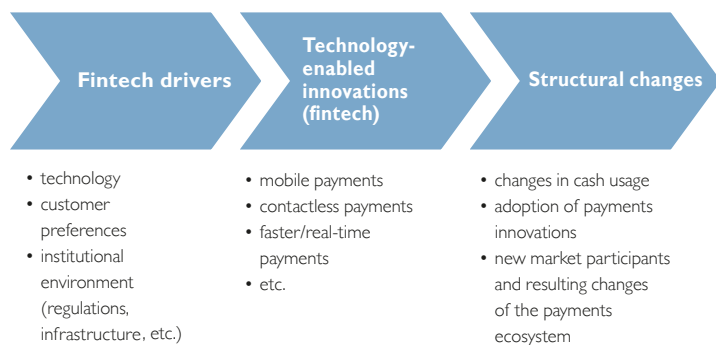
## 1 Methodology and framework

Over the past few years, a variety of technology-enabled innovations (fintech) have taken hold in retail payments markets in response to customer needs for faster, more secure and more convenient payment methods. These innovations comprise e.g. mobile and contactless payment methods, peer-to-peer money transfers, faster / real-time settlement of transactions, one-click payment / checkout, online payment solutions that do not require providing sensitive payment information to merchants, and cheaper solutions for transferring money abroad. Stern (2017) highlights that the more radical innovations use e-money to circumvent the use of traditional bank accounts for payments. The European Commission (2016) provides a detailed analysis of the contribution of fintech to retail payments market innovation.

Chart 1 illustrates the framework we use to discuss technology-enabled innovations (fintech) in retail payments markets. Useful and comparable indicators for fintech are not readily available for all EU countries, however, which is why we mostly use evidence for the case study countries. The tables often show the best available proxy measures. Moreover, studying fintech and its drivers requires qualitative information on regulations, the structure of the fintech ecosystem, etc. collected from national sources. The tables in section 3 show that especially regarding structural changes, the dimension we are most interested

Chart 1

### Fintech, its drivers and related structural changes



Source: Author's compilation.

in, indicators are scarce, mostly based on crude estimations and compiled from national sources. Building a comparable, cross-country database for fintech-relevant variables should therefore be a priority.

Given these data limitations, the paper uses four case study countries as examples for the dynamics discussed: Sweden, Austria<sup>3</sup>, Estonia and Bulgaria. The main idea behind the country selection was to cover a broad range of different payment market developments in Europe. This could have been achieved with many different country pairings. We chose four small countries, given that small internal markets imply potentially larger benefits of European market integration and because these countries tend to have less bargaining power in international negotiations, e.g. on financial regulation. The small number of countries was necessary to keep the study manageable.

## 2 Drivers of fintech

Several factors are contributing to fintech innovations in the markets. Some key drivers of fintech innovations are technology, changing customer behaviors and regulatory and institutional changes.

### 2.1 Technology

In this paper, we understand the term “technology” to include both genuinely new technologies, such as innovations in blockchain technologies, artificial intelligence or cryptography, but also the spreading of technology throughout society, e.g. the increasing adoption of Internet-enabled mobile phones. Using mobile phones for payment purposes has proven to be an important innovation to increase financial inclusion in some emerging countries.

To approximate the availability of technologies and the appropriate business environment for turning technologies into actual innovations, table 1 shows the Digital Economy and Society Index (DESI), the World Bank Ease of doing business index and the European Innovation Scoreboard (EIS) ranking for the case study countries. Among the case study countries, Sweden emerges as the clear front runner, while Bulgaria shows the lowest rankings by far. Between Austria and Estonia, the latter seems to be somewhat better positioned regarding fintech. Estonia shows better scores in two categories. In particular, the ease of setting up a business can

Table 1

#### Innovation-friendly business environment

Indicators	Sweden	Austria	Estonia	Bulgaria
Digital Economy and Society Index 2017 (index between 0 and 100) <sup>1</sup>	67.5	56.8	58.0	37.0
Place in DESI EU-28 ranking <sup>1</sup>	3	10	9	27
World Bank Ease of doing business index (place in ranking of 190 countries)	10	22	12	50
European Innovation Scoreboard (place in EU-28 ranking)	1	10	17	27

Source: European Commission, World Bank.

<sup>1</sup> The Digital Economy and Society Index (DESI) 2017 consists of five subcategories including a total of 34 indicators.

Note: Shades of blue and orange indicate whether a country is doing better (darker blue) or worse (darker orange) than the other countries in terms of fintech (intra-row comparison).

<sup>3</sup> For Austria, new data became available after this study was completed; see Ritzberger-Grünwald and Stix (2018).

be considered very important in an industry heavily reliant on technology-based start-ups. In addition, Estonia has recently started the e-Residency project, which enables businesses to easily start a company in Estonia digitally.

## 2.2 Customer behavior

Regarding shifts in customer behavior, the widespread availability of Internet-enabled devices and applications has changed the way individuals interact with their environment. Table 2 shows various aspects of this dimension, namely proxies for consumer attitudes toward technologies, their capabilities to use technologies, and actual usage as measured by the DESI. While, overall, consumers in all four countries seem to have fairly positive opinions on the impact of recent technologies, the gaps regarding capabilities and usage are wider.

On the one side, Sweden stands out, with consumers having the skills and attitude to adopt new technologies fast, which is also reflected in the DESI's usage-related indicators. Estonians have a similarly positive attitude, but lag in terms of skills and adoption. Austrians have a somewhat less positive attitude toward technologies, fewer people feel sufficiently skilled to use new technologies and adoption rates are comparatively low. Bulgaria lags behind the other countries in all categories, with the gap being lowest for the attitude proxy variable.

## 2.3 Regulation and policies

Regulation and government policies also play a major role in the evolution of the payments landscape. Over the past years, several legal acts have been passed that directly relate to fintech, e.g. the EU's Payment Services Directive 2 (PSD2). The PSD2 broadens the application of the PSD to two new types of (fintech) companies<sup>4</sup>, gives customers control over who can access their payments data, obliges incumbents to provide easier and more secure access to these data to other companies and

Table 2

### Consumer behavior

Indicators	Sweden	Austria	Estonia	Bulgaria
<b>Attitude:</b> share of respondents who think that the most recent digital technologies have a positive impact on the economy / society / their own lives (average) <sup>1</sup>	77	68	77	67
<b>Skills:</b> share of respondents who think that they are sufficiently skilled in the use of digital technologies for their daily lives <sup>1</sup>	89	70	75	54
<b>Financial inclusion:</b> share of respondents (aged 15+) who hold an account at a financial institution <sup>2</sup>	100	98	98	72
<b>Use:</b> DESI Use of Internet indicator (place in EU-28 ranking)	2	20	6	28
Online banking users (% of Internet users over the last three months)	89	63	90	7
Online shopping (% of Internet users over the last year)	80	68	64	27

Source: European Commission, World Bank.

<sup>1</sup> Special Eurobarometer 460: Attitudes towards the impact of digitisation and automation on daily life.

<sup>2</sup> World Bank Global Financial Inclusion Database.

Note: Shades of blue and orange indicate whether a country is doing better (darker blue) or worse (darker orange) than the other countries in terms of fintech (intra-row comparison).

<sup>4</sup> Account information services providers (AISPs), who provide consolidated information on payments accounts held by a user, and payment initiation services providers (PISPs), who access a user's payment account with the user's consent and authentication to trigger a payment on the user's behalf.

implements a variety of new technical standards that relate, for instance, to strong and secure customer authentication. It is widely expected that the PSD2 will considerably change the payments landscape, in particular given its far-reaching implications for the control and use of customer data and customer relationships (see e.g. Botta et al., 2018). However, whether these expectations are correct will be clear only after the end of the implementation phase for regulatory technical standards in September 2019.

While the PSD2 constitutes EU-wide legislation, it should be noted that in many countries there are also national regulations on payment services. If there are too many divergent national regulations, these may act as barriers to cross-border business expansion. A fintech innovation in lending illustrates this fact: In the absence of a harmonized EU regulation, eleven EU Member States have adopted national regulations for crowdfunding. This has created higher barriers for the cross-border expansion of crowdfunding platforms (European Commission, 2018). Although national regulators are aware of this difficulty, they must react in a timely fashion to risks arising in national markets and may not be able to wait for a harmonized European solution to be agreed upon and implemented.

This may also apply to other government policies. In a stock-taking exercise, the EBA (2017) concluded that policy approaches to fintech differed across the EU, with 2 countries reporting that they had a sandboxing regime<sup>5</sup> in place, 4 reporting an innovation hub, 7 some other, similar fintech approach and 11 that they had no specific fintech initiative in place (EBA, 2017a). Different treatment can have important implications for the development of new services.

Given that the term “fintech” was only created recently, regulators and authorities are still in the process of developing approaches and stances regarding the topic. Sveriges Riksbank, the Swedish central bank, has repeatedly stated that it actively promotes innovation in this field (Skingsley, 2017). The Swedish supervisory authority, Finansinspektionen, published a report on fintech in December 2017 and launched its Innovation Centre shortly after, which serves as a contact point for financial innovators with the regulator. Eesti Pank, the Estonian central bank, has explicitly included the monitoring of fintech activities as one of its development tasks in its 2018 to 2022 strategy. Moreover, it has established a fintech hub. The Estonian government is also actively pushing for innovative companies to set up establishments in Estonia, e.g. via its e-Residency program. The Austrian Financial Market Authority (FMA) and the Oesterreichische Nationalbank (OeNB), have shown a more cautious approach toward supporting payments market innovation. A more in-depth consideration of the topic began with the establishment of the FMA’s FinTech contact point. In early 2018, the Austrian government initiated the FinTech Advisory Board (FinTech Beirat) to discuss relevant fintech policies. In Bulgaria, the Financial Supervision Commission adopted its FinTech Monitoring Strategy in June 2018, which discusses measures such as consulting stakeholders to determine potential policy measures, e.g. the establishment of an innovation hub or sandbox.

<sup>5</sup> Sandboxes are generally regimes run by national regulators or governments where companies can apply to test a new and innovative service on a small scale, for a limited amount of time and closely monitored by regulators, without having to apply for a full license for that service beforehand.

## 2.4 Supportive infrastructures

The availability of certain infrastructures can have both a supportive and hindering effect on companies' ability to implement new and innovative solutions. Fintech services are often marketed or accessed online. In finance, in the light of know-your-customer regulations, remote identification of customers has therefore been an issue from the start. The EU has passed various regulations on e-identification. For businesses it is easiest if there is a widely accepted and easy means for consumers to identify themselves remotely. Of the case study countries, Sweden and Estonia both already have a widely established digital identification solution for public and private services: the Swedish BankID and Estonia's digital ID launched in 2001. Currently, no similarly widely used digital identification solutions exist in Austria or Bulgaria.

Payments infrastructures can also foster innovations. Several Swedish banks built their widely used mobile payments app, Swish, on the Swedish real-time settlement system, which has been in place since 2012. In this context, the implementation of the SEPA Instant Credit Transfer (SCT Inst) scheme and the related infrastructures, EBA Clearing RT1, active since November 2017, and the Eurosystem's TARGET Instant Payment Settlement (TIPS) service, expected to be launched in November 2018, are important initiatives. The Governor of Eesti Pank stated in December 2017 that within one year all banks operating in Estonia should be able to provide instant payments, arguing that this would allow for new business models (Eesti Pank, 2017a). One key aspect and issue of payments infrastructures is interoperability – a lack of interoperability between systems within and across countries can act as a key barrier for market participants in expanding their services.

## 3 Technology-enabled innovations and structural changes

All these drivers influence the fintech innovations that reach the market. In terms of structural developments, this study focuses on the use of selected payments innovations and their relation to cash usage as well as on changes in the ecosystem of players in payments markets.

### 3.1 Noncash payments and innovations

In all case study countries, cards are the most important means of payment for noncash payments in the retail payments segment. However, data on the adoption of retail payments innovations are very limited.

One recent innovation are contactless payments, often via near field communication (NFC)-enabled cards. While this seems a trivial innovation at a first glance, De Nederlandsche Bank (2018) reports that NFC has been a major contributing

Table 3

### Mobile payments

Indicators	Sweden	Austria	Estonia	Bulgaria
Utility bills paid via mobile phone, 2017 (% of population paying utility bills)	41	11	15	3
Percentage point change since 2014	+29	+5	+11	+2

Source: World Bank Global Financial Inclusion Database, author's calculations.

Note: Shades of blue and orange indicate whether a country is doing better (darker blue) or worse (darker orange) than the other countries in terms of fintech (intra-row comparison).

factor for the substitution of cash for low value payments in the Netherlands. In 2016, contactless payments at points-of-sale (POS) accounted for roughly 2% of all POS payments in the euro area. In Austria, the comparable share was 3.5%, the third highest in the euro area, while in Estonia it was only 0.5% (Esselink and Hernández, 2017). So Austrians appear to be adopting this new technology rather fast. One explanation for why Estonia has been lagging behind in this respect could be the slower roll-out of the infrastructure necessary to accept contactless payments (Laur, 2016).

Mobile payments are one of the best-known innovations in retail payments, but there are no comparable data on mobile payments usage across countries. Therefore, an indicator from the Global Findex database serves as a proxy. It shows that the number of persons who paid utility bills using a mobile phone was highest (41%) and increasing fastest (+29 percentage points) in Sweden, followed by Estonia and Austria; and it also shows very low usage (3%) and growth numbers (2 percentage points) for Bulgaria. Sweden is so far the only country of the four countries in our sample with a widely used mobile payments app: it is called Swish and was launched by Sweden's largest banks in 2013. In 2018, 60% of respondents in the payments survey carried out by Sveriges Riksbank every two years stated that they had used Swish to make a payment over the past month. In 2014 and 2016, the percentages were 10% and 50%, respectively (Sveriges Riksbank, 2018). Swish is therefore a good example of how fast fintech innovations can spread. In the other countries observed, there is usually more than one peer-to-peer or other mobile payment app in place (e.g. ZOIN, BlueCode, Pocopay, Paysera), but mobile payments have not reached a scale like that of Swish so far. Most of the apps in questions were also launched later than Swish.

### 3.2 Changes in cash usage

Noncash payments innovations that make payments easier, faster and more convenient increase the incentives to use these payments methods. In the case of mobile or contactless payments in Sweden and the Netherlands, for instance, this trend has been at the expense of cash (De Nederlandsche Bank, 2018; Ingves, 2018). However, cash usage has not been declining in every country. In the South(eastern) European countries, but also in Germany and Austria, cash is still very dominant and cash usage is fairly stable (Van der Knaap et al., 2016; Rusu and Stix, 2017;

Table 4

#### Cash usage

Indicators	Sweden	Austria	Estonia	Bulgaria
Estimated share of cash transactions in number of retail transactions <sup>1</sup> (%)	15	82	48	95
Estimated share five years earlier (%)	40	86	×	×
Number of ATM cash withdrawals per inhabitant, 2017 <sup>2</sup>	13	35	29	17
Percentage change since 2014	-39	+2	-6	+18
Value of ATM cash withdrawals per inhabitant, 2017 <sup>2</sup> (EUR)	1527	6167	3213	1548
Percentage change since 2014	-35	+9	+8	+28

Source: Author's compilation.

<sup>1</sup> Austria: Rusu and Stix (2017); Estonia: Esselink and Hernández (2017); Sweden: Sveriges Riksbank (2017b); Bulgaria (including corporate data from 2012): Van der Knaap (2016).

<sup>2</sup> Data retrieved from ECB Statistical Data Warehouse and Eurostat; data for Bulgaria for 2016.

Note: Shades of blue and orange indicate whether a country is doing better (darker blue) or worse (darker orange) than the other countries in terms of fintech (intra-row comparison).

Bagnall et al., 2014). Overall, available evidence suggests that cash is still the dominant retail payment method in most European countries, followed by cards as the dominant noncash payment method. Esselink and Hernández (2017) report for the euro area that cash accounted for 79.5% of all POS transactions (56% of the total value of transactions). 18.5% of all POS transactions were made using cards (37% of total value) and only 2% of total POS transactions (7% of total value) were made by any other payment form.

Table 4 shows some estimations of cash usage for the case study countries. Given that consumers first withdraw most of the cash they spend from ATMs, the number and value of ATM withdrawals per inhabitant is shown as an additional proxy for cash usage.

In the case study countries, the use of cash compared to noncash payment methods has differed historically, but the example of Sweden shows that new technologies can accelerate the adoption of noncash payment methods rapidly. Cash usage in Sweden has declined very quickly, with the proportion of cash payments in the retail sector falling from close to 40% in 2010 to about 15% in 2016 (Ingves, 2018; Sveriges Riksbank, 2017b). Sveriges Riksbank (2018) carries out a payment behavior survey of a random sample of 2,000 citizens every two years. When asked about their attitude regarding the steady decline of cash, 26% of respondents indicated a negative and 47% a positive attitude toward this change. The fast-paced innovation in the Swedish payments landscape is also leading to new questions regarding monetary policy and financial stability. Managing the transition toward a payments system less reliant on cash is a key topic for Sveriges Riksbank. It is one of the first central banks worldwide that has started investigating the possibility of issuing a central bank digital currency (Skingsley, 2017).

For Estonia, Esselink and Hernandez (2017) estimated that cash only accounts for 48% of all POS transactions in terms of numbers and for 31% in terms of volume of all retail transactions in Estonia. These are some of the lowest corresponding figures recorded in the euro area. However, according to Eesti Pank's 2017 payments behavior survey, this has not changed much over the past five years. According to the survey, 79% of Estonians oppose the idea of a completely cashless society – in contrast to consumers in Sweden (Eesti Pank, 2017b).

At this point, the Austrian payments market does not show much evidence for rapid structural change. Based on the OeNB's regular surveys on the use of cash in the economy, cash usage is fairly high and stable, consistent with the high cash preferences found in studies such as Bagnall et al. (2014) and Rusu and Stix (2017). The share of cash transactions in the total number of consumers' payment transactions stood at 82% in 2016, only marginally lower than the 86% recorded in 2011. In terms of transaction volumes, the share of cash payments came to 65%, down from 73.2% in 2011.

For Bulgaria, there are no reliable estimations for cash usage. Estimations from the European Cash Report (Van der Knaap et al., 2016) based on 2012 data suggest that roughly 95% of all payment transactions in Bulgaria (including those by corporates) were cash transactions. It is likely that the share of cash payments in Bulgaria has decreased since 2012 as financial inclusion has progressed, but it remains one of the highest in Europe. In the 2017 edition of the World Bank Global Financial Inclusion Database, 84% of Bulgarian respondents stated that they had paid utility bills exclusively in cash. This corresponds to a decline by 8 percentage points since the 2014 edition.



Table 5

### Fintech ecosystem

Indicators	Sweden	Austria	Estonia	Bulgaria
Estimated number of fintechs headquartered in country x <sup>1</sup>	120 to 190	15 to 30	15 to 30	5 to 15
Fintech associations (number of members) <sup>2</sup>	SweFintech (founded in 2017) 50	Fintech Austria (founded in 2017) 33	x	Fintech Bulgaria (founded in 2018) 9
Bigtech (number of banks supporting Apple Pay) <sup>3</sup>	3	0	0	0
Can businesses located in country x receive payments via Amazon Pay? <sup>3</sup>	yes	yes	no	no
Is Google Pay available for online payments / via apps? <sup>3</sup>	yes	yes	yes	yes

Source: Author's compilation.

<sup>1</sup> Estimations based on various sources: Crunchbase; Gromek (2018), Wirtschaftsagentur Wien (2017), startupestonia.ee; websites of fintech associations.

<sup>2</sup> Sweden also has a fintech hub, which was founded in 2016 and has over 100 members; to our knowledge, there is no dedicated, private fintech association in Estonia, but there are related government initiatives, e.g. Startup Estonia.

<sup>3</sup> Data retrieved from the official websites of Apple Inc., Google LLC and Amazon.com, Inc.; last accessed on September 26, 2018.

### 3.3 New players in the payments ecosystem

Many companies have joined the payments industry and financial services value chains. This includes many technology-based start-ups, often referred to as “fintechs” – some of which have already passed the start-up stage and matured over the past years. The EBA (2017) reported that there are currently more than 1,500 fintechs active in Europe; given the EBA’s methodology, this is likely to be a lower bound. Estimating the number of fintechs is complicated as the boundaries of the industry remain unclear, the availability of data is low and many new fintech start-ups do not survive long and exit the market via bankruptcy or buyout by an incumbent bank or a larger fintech.

It is therefore difficult to accurately establish how many fintech companies exist in the case study countries. However, no matter which source is used, the country ranking in terms of fintech numbers is the same, with Sweden showing by far the highest number, followed by Estonia and Austria with roughly similar numbers<sup>6</sup> and finally Bulgaria, which records the lowest numbers. We include only companies that are headquartered in the respective country and include all companies that directly provide financial services or facilitate the provisioning of financial services.

Overall, Sweden has without doubt the most vibrant fintech scene. The Stockholm School of Economics (2018) estimated that the number of fintechs in the greater Stockholm area was between 120 and 188, depending on a broader or narrower definition of fintechs. In a study on the top global fintech ecosystems based on 72 indicators, the Institute for Financial Services Zug (IFZ) (2018) ranked Stockholm seventh out of 30 cities across the globe. To give some examples: Europe’s largest licensed fintech, payment services provider Klarna, was founded in Sweden in 2005. According to its website, Klarna serves 60,000,000 end users and 70,000 merchants in 18 markets. Swedish POS infrastructure provider iZettle<sup>7</sup> and payment initiation service provider Trustly were both listed by the Financial Times among the 500 fastest-growing companies in Europe in 2017.

<sup>6</sup> To put this into perspective: Estonia’s population is roughly one-seventh of that of Austria.

<sup>7</sup> Recently acquired by PayPal.

In Estonia, according to the government initiative Startup Estonia, at the end of 2017 there were roughly 400 start-ups, of which roughly 20 to 25 can be classified as fintechs.<sup>8</sup> The fintech scene seems to be of small to medium size, with some mature, innovative companies expanding on an international level (Scott-Briggs, 2017). Fortumo, for instance, founded in 2007, is a mobile payments start-up that allows direct carrier billing with over 350 mobile operators in over 90 countries.

Turning to Austria, in 2018 Vienna was included for the first time in the IFZ's ranking of fintech hubs. Out of 30 cities, it ranked 15<sup>th</sup> (IFZ, 2018). At the time of writing there were only a handful of licensed payments fintechs in Austria. Judging from a recent report by Wirtschaftsentur Wien (2017) and memberships in Austria's fintech association, there are probably 20 to 25 fintechs in Austria today. Dimoco is one of the largest; it was founded in 2000 and specializes in carrier billing, providing payment services to merchants and mobile messaging.

According to the available sources, Bulgaria has a rather small number of fintech start-ups. The Bulgarian fintech association, which was founded in 2018, currently has six fintech members. Deloitte (2016) concluded that Bulgaria was lagging behind bigger CESEE countries in terms of financial technology, although it is a test market for IT and technology services and products. One of Bulgaria's fintechs is Cashwave, which has built its business model on the large market of remittances in CESEE and is active in eight markets.

The market presence of large technology companies such as Google, Amazon, Facebook and Apple, which are often referred to as bigtechs, also differs across Europe, but is expanding fast. Between November 22, 2017, and June 22, 2018, Apple Pay and Google Pay, for example, increased their presence in European countries from 8 to 15 and 6 to 8 countries, respectively (according to information on their websites). The activities of large technology companies could be a game changer over the next few years, as these companies mostly have loyal, highly engaged user bases, vast resources and are more technologically advanced and versatile than incumbent banks (McKinsey, 2015). Also, telecommunications companies have entered the payments market, as mobile phones increasingly serve as tools of payment, and payment methods such as carrier billing<sup>9</sup> are becoming increasingly widespread (e.g. Dimoco). Telenor, one of Bulgaria's largest telecommunications companies, offers G-Wallet, which allows customers to use their phone for payments. It cooperates with a selected number of Bulgarian banks.

Incumbent banks have also innovated and engaged in fintech activities. According to Deloitte (2016), incumbent banks are the most innovative players in Austria. In Sweden, the largest banks cooperated to create a real-time settlement infrastructure and, on this basis, launched the mobile app Swish. Also, in the other countries under observation, established institutions continue to play a critical role, given their large customer bases and resources.

#### **4 Retail payments market integration and policy challenges**

This section discusses the conclusions from our case studies from the perspective of further retail payments market integration.

<sup>8</sup> See <http://www.startupestonia.ee/about>; the list also includes some larger, already mature companies

<sup>9</sup> Carrier billing means that a payment is charged to a customer's telephone bill. This is particularly popular for small, recurring payments such as purchases of music, gaming content or apps.

#### 4.1 Retail payments market integration

Creating a single market for payments has been an important subtopic of the European Single Market project, given that market integration is in many cases associated with overall welfare gains. Moreover, harmonization enhances the smooth functioning of payment and settlement systems, which is a core task of the European System of Central Banks (ESCB). A European payments market that is fragmented in terms of regulations and policies is a key barrier to cross-border activities for all market participants. Many projects, initiatives and committees on European retail payments market integration have been started (and completed), e.g. the Single Euro Payments Area (SEPA) or PSD2, as mentioned above. SEPA has significantly reduced structural barriers for payments market integration, harmonizing standards and lowering costs for cross-border payments made in euro from bank account to bank account. However, SEPA or PSD2 regulate only part of the rapidly changing payments landscape, which is continuously giving rise to further regulatory and policy challenges.

Some other important recent initiatives in retail payments market harmonization include the European Commission's Consumer Financial Services Action Plan<sup>10</sup>, published in March 2017, its FinTech Action Plan<sup>11</sup> and the EBA's FinTech Roadmap<sup>12</sup>, both published in March 2018. Moreover, the European Retail Payments Board (ERPBB) was established in 2014 as a high-level strategic group bringing together various retail payments stakeholders.

Nonetheless, financial integration in European payments markets is considered to be generally low, mostly due to significant barriers for cross-border sales and activities. According to the European Commission (2016), key barriers that remain in the payments area are related e.g. to the custodianship of customer relationships, customer inertia, access to an EU-wide settlement infrastructure, payment acceptance by merchants and consumers and lack of harmonization in the regulatory environment.

#### 4.2 Resulting challenges for policymakers

On the one hand, fintech and digitalization offer chances to foster a European single market for retail payment services by lowering barriers, e.g. providing the possibility to sell and market financial products online and to conduct know-your-customer processes remotely and reducing the necessity for businesses' extensive and costly physical presence in each country of operation (European Commission, 2016). However, there are also risks that fintech and digitalization could raise barriers in some areas. In the following, we use examples from the case studies to discuss some of the most crucial fintech-related questions for policymakers. These questions concern the assessment of trends across Europe and potential implications for monetary and regulatory policy. However, drawing final conclusions would require further analysis and much better data than currently available for a cross-section of European countries.

<sup>10</sup> European Commission. 2017. COM/2017/0139 final. *Consumer Financial Services Action Plan: Better Products, More Choice.*

<sup>11</sup> European Commission. 2018. *Communication COM(2018) 109 final.*

<sup>12</sup> [www.eba.europa.eu/-/eba-publishes-its-roadmap-on-fintech](http://www.eba.europa.eu/-/eba-publishes-its-roadmap-on-fintech).

### **Are there common or diverging trends in payments markets across countries?**

The case studies show that despite the historical differences between the four countries, some similar payments market developments can be observed: fintech is a topic in all four countries, evidenced by the existence of fintech associations and hubs, regulatory approaches and government projects. Moreover, payment innovations such as NFC-enabled cards and mobile payment apps are in place in all countries, even though the number of available solutions and the rate of adoption differ. In addition, incumbent banks and payment service providers remain the dominant players, even though some challenger companies have started to gain market share in certain niches.

Nonetheless, the speed of structural changes differs across countries, with Sweden standing out as it sees declining cash usage, a high take-up of mobile payments and a vibrant fintech ecosystem. In Estonia, fintech developments are not yet of the same scale, but the country already features low cash usage by European standards and a supportive environment for fintech, with high digitalization scores and a start up-friendly environment and policy approach. While Austria is an innovative and digitally advanced economy, it seems that consumers and authorities have been more conservative regarding fintech, which is reflected in the rather stable structure of the Austrian payments market and limited fintech activity. For Bulgaria, very few data are available; available sources suggest, however, that the country lags behind the other countries, most likely also because it has yet to catch up regarding overall financial inclusion and digitalization.

In all countries observed, there are fintech solutions and fintechs that operate nationally, e.g. peer-to-peer apps like Swish, ZOIN and others that have expanded rapidly across borders, e.g. Klarna and Dimoco. In the mobile payments area, most of the solutions provided by fintechs and incumbents are national, and even within national borders there are often various providers. This increases the number of payment methods that consumers and stores must handle, which makes the payments system more complex. In fact, one common fintech business model provides integrated payment solutions for merchants, given the difficulties for merchants associated with handling payments through various channels. Whether one or several dominant mobile payment solutions will emerge on the European market or whether this market segment will remain highly fragmented is currently unclear.

### **What does declining cash usage imply for monetary authorities?**

Even though historically, Sweden has already posted a comparatively low share of cash transactions in overall payment transactions, over the past years cash usage has declined rapidly. Fintech, e.g. the mobile payments app Swish, has most likely contributed to this trend, as it increased the incentives for customers to switch from cash to noncash payments (e.g. Ingves, 2018; De Nederlandsche Bank, 2018). The speed at which cash can be replaced can serve as a warning example for regulators and for incumbent banks not to underestimate the speed at which fintech innovations expand.

The decline of cash usage has raised a few questions in Sweden and will raise similar questions across all countries that experience similar trends: How can the monetary authorities ensure a smooth transition to a society that is less dominated by cash? How to ensure that nobody is excluded from the payments system? How

to ensure the smooth provision of cash in a cost-effective manner if only a small share of the population uses cash? Is it desirable for central banks to issue their own digital currency in such cases? All these questions are important, and how central banks across Europe will react to them will have an impact on the overall functioning of the European financial system. The questions become more intricate for euro area countries, which share a common currency and monetary policy but have different evolutions of cash usage. Given that declining cash usage has already become a reality for some European countries, it is important to tackle these questions at a European level in a timely fashion.

### Can international policymaking keep up with the pace of innovation?

Digitalization could also create new barriers if national regulators feel the need to pass national regulations to tackle arising issues. This has already happened regarding some fintech developments, e.g. crowdfunding, for which there are eleven different national regimes, which make international expansion difficult for crowdfunding platforms (European Commission, 2018). PSD2 was a positive example in payments in this regard, given that it provides a harmonized European framework for dealing with some of the new business models and issues arising through fintech. Nonetheless, the risk of unilateral regulations remains and increases with the heterogeneity of European countries. Heterogeneity in terms of the structure and evolution of national retail payments markets implies that individual countries may have different interests and priorities in this area, which may slow down the international regulatory process. Continuous monitoring of trends and close cooperation between regulators and policymakers across Europe are needed to avoid increases in regulatory fragmentation.

Similar considerations apply to the support of innovation and fintechs, e.g. the establishment of sandboxes and innovation hubs and the modernization of payment infrastructures. While infrastructure modernizations are desirable, their design and interoperability with existing systems are key. For instance, once TIPS is launched, there will be two major pan-European instant payments infrastructures in the euro area: the EBA's Clearing RT1 and the Eurosystem's TIPS, with the latter offering real-time settlement to banks in central bank money. TIPS and RT1 and other automated clearing house (ACH) solutions are not interoperable. However, the EBA and ACHs can act as TIPS' instructing parties for banks, and thus TIPS can foster the reachability between ACH participants.

## 5 Conclusions

We provide a simple framework for discussing the drivers, innovations and structural changes in retail payments markets and apply the framework to four European case study countries: Sweden, Estonia, Austria and Bulgaria. Evidence from these four countries shows that their national retail payments markets differ strongly in their characteristics and structural developments. Regarding structural developments, the study focuses on the use of selected payments innovations and their relation to cash usage as well as on changes in the ecosystem of players in payments markets. The Swedish example shows that fintech can contribute to a decline in cash usage, given more consumer-friendly noncash alternatives and increased possibilities to use them online and in stores. Moreover, payments ecosystems are being altered by new payment methods, business models and players, including start-ups and bigtechs.

The case studies show that despite the differences observed across countries, there are some similarities as well. However, they also point to several questions regarding the further integration of national retail payments markets in Europe.

The main conclusions that can be drawn from this study are the following: First, we need better data on structural changes in retail payments markets since current statistics often do not capture recent trends sufficiently well. We also need a proper definition of the fintech industry. Second, monetary authorities and regulators should continuously monitor trends within and across national retail payments markets, given the potential speed at which fintech innovations may spread within and across markets. Finally, all European stakeholders in the field of fintech need to cooperate, both nationally and internationally, to ensure that best practice is implemented and structural barriers in retail payments markets do not increase.

Ultimately, whether fintech will contribute to higher market integration or to higher fragmentation will most likely depend on the appropriate policy responses and on continued efforts to establish a single market for retail payments.

## References

- Bank for International Settlements (BIS). 2018.** Sound Practices: Implications of Fintech Developments for Banks and Bank Supervisors. [www.bis.org/bcbs/publ/d415.htm](http://www.bis.org/bcbs/publ/d415.htm)
- Bagnall, J., D. Bounie, K. P. Huynh, A. Kosse, T. Schmidt, S. Schuh and H. Stix. 2014.** Consumer cash usage: a cross-country comparison with payment diary survey data. In: Deutsche Bundesbank Discussion Paper 2014 (13).
- Botta, A., N. Digiacomo, R. Höll and L. Oakes. 2018.** PSD2: taking advantage of open-banking disruption. [www.mckinsey.com/industries/financial-services/our-insights/psd2-taking-advantage-of-open-banking-disruption](http://www.mckinsey.com/industries/financial-services/our-insights/psd2-taking-advantage-of-open-banking-disruption)
- CEPS-ECRI Task Force. 2017.** The Future of Retail Financial Services. [www.ceps.eu/publications/future-retail-financial-services-what-policy-mix-balanced-digital-transformation](http://www.ceps.eu/publications/future-retail-financial-services-what-policy-mix-balanced-digital-transformation)
- Deloitte. 2016.** Fintech in CEE – Charting the Course for Innovation in Financial Services Technology. United Kingdom Department for International Trade.
- De Nederlandsche Bank. 2018.** From cash to cards – how debit card payments overtook cash in the Netherlands. In: DNB Occasional Studies 16 (1).
- Eesti Pank. 2017a.** All banks should start providing instant payments within a year says Madis Müller. Eesti Pank press release. [www.eestipank.ee/en/press/all-banks-should-start-providing-instant-payments-within-year-says-madis-muller-04122017](http://www.eestipank.ee/en/press/all-banks-should-start-providing-instant-payments-within-year-says-madis-muller-04122017)
- Eesti Pank. 2017b.** People are used to paying with bankcards, but still would not like to see a cashless society. Eesti Pank press release. [www.eestipank.ee/en/press/people-are-used-paying-bankcards-still-would-not-see-cashless-society-11122017](http://www.eestipank.ee/en/press/people-are-used-paying-bankcards-still-would-not-see-cashless-society-11122017)
- Esselink, H. and L. Hernández. 2017.** The Use of Cash by Households in the Euro Area. European Central Bank. Occasional Paper Series No 201.
- European Banking Authority (EBA). 2017a.** Discussion Paper on the EBA's approach to financial technology (FinTech). EBA Discussion Paper 2017 (2).
- European Banking Authority (EBA). 2017b.** Risk assessment of the European banking system – November 2017. Luxembourg: Publications Office of the European Union.
- European Commission. 2016.** Study on the role of digitalisation and innovation in creating a true single market for retail financial services and insurance. [https://ec.europa.eu/info/system/files/study-digitalisation-01072016\\_en.pdf](https://ec.europa.eu/info/system/files/study-digitalisation-01072016_en.pdf).
- European Commission. 2018.** FinTech Action plan: For a more competitive and innovative European financial sector. [https://ec.europa.eu/info/publications/180308-action-plan-fintech\\_en](https://ec.europa.eu/info/publications/180308-action-plan-fintech_en)

- Gromek, M. 2018.** Stockholm FinTech Report 2018. Stockholm School of Economics. [www.hhs.se/en/outreach/sse-initiatives/documents/stockholm-fintech-report-2018/](http://www.hhs.se/en/outreach/sse-initiatives/documents/stockholm-fintech-report-2018/)
- Ingves, S. 2018.** Speech: Money and payments – where are we heading. Sveriges Riksbank. [www.riksbank.se/globalassets/media/tal/engelska/ingves/2018/tal\\_ingves\\_180604\\_eng.pdf](http://www.riksbank.se/globalassets/media/tal/engelska/ingves/2018/tal_ingves_180604_eng.pdf)
- Institute for Financial Services Zug (IFZ). 2018.** IFZ FinTech Study 2018 – Overview of Swiss FinTech. [www.researchgate.net/publication/323831793\\_IFZ\\_FinTech\\_Study\\_2018](http://www.researchgate.net/publication/323831793_IFZ_FinTech_Study_2018).
- Laur, J. 2016.** Payment solutions in innovative Estonia. [www.europeanpaymentscouncil.eu/news-insights/insight/payment-solutions-innovative-estonia](http://www.europeanpaymentscouncil.eu/news-insights/insight/payment-solutions-innovative-estonia)
- McKinsey. 2015.** Global Payments 2015: A Healthy Industry Confronts Disruption. [www.mckinsey.com/industries/financial-services/our-insights/global-payments-2015-a-healthy-industry-confronts-disruption](http://www.mckinsey.com/industries/financial-services/our-insights/global-payments-2015-a-healthy-industry-confronts-disruption)
- Ritzberger-Grünwald, D. and H. Stix. 2018.** How Austrians bank and pay in an increasingly digitalized world – results from an OeNB Survey. In: Monetary Policy and the Economy Q3/18. Vienna: OeNB. 52–87.
- Rusu, C. and H. Stix. 2017.** Von Bar- und Kartenzahlern – Aktuelle Ergebnisse zur Zahlungsmittelnutzung in Österreich. In: Monetary Policy and the Economy Q1/17. Vienna: OeNB. 54–85.
- Scott-Briggs, A. 2017.** 10 Popular fintech Companies in Estonia. [www.techbullion.com/10-popular-fintech-companies-estonia/](http://www.techbullion.com/10-popular-fintech-companies-estonia/)
- Skingsley, C. 2017.** How the Riksbank encourages innovation in the retail payments market. [www.bis.org/review/r170120b.pdf](http://www.bis.org/review/r170120b.pdf)
- Stern, C. 2017.** FinTechs and their emergence in banking services in CESEE. In: Focus on European Economic Integration Q3/17. Vienna: OeNB. 58–74.
- Stockholm School of Economics. 2018.** Stockholm Fintech Report 2018. [www.hhs.se/en/outreach/sse-initiatives/documents/stockholm-fintech-report-2018/](http://www.hhs.se/en/outreach/sse-initiatives/documents/stockholm-fintech-report-2018/).
- Sveriges Riksbank. 2018.** Payment patterns in Sweden 2018. [www.riksbank.se/globalassets/media/statistik/betalningsstatistik/2018/payments-patterns-in-sweden-2018.pdf](http://www.riksbank.se/globalassets/media/statistik/betalningsstatistik/2018/payments-patterns-in-sweden-2018.pdf)
- Sveriges Riksbank. 2017a.** Fintech – increasingly rapid interaction between financial operations and technological innovation. In: Financial Stability Report 2017 (1). Stockholm: Sveriges Riksbank. 45–48.
- Sveriges Riksbank. 2017b.** The Riksbank’s e-krona project: Report 1. [www.riksbank.se/en-gb/financial-stability/payments/e-krona/the-e-krona-projects-first-interim-report/](http://www.riksbank.se/en-gb/financial-stability/payments/e-krona/the-e-krona-projects-first-interim-report/)
- Van der Knaap, P., T. de Vries and K. Tielenius Kruythoff. 2016.** Cash Report 2016: Europe. [www.g4scashreport.com](http://www.g4scashreport.com)
- Wirtschaftsagentur Wien. 2017.** FinTech – Technology Report. [www.fintechmatters.org/wp-content/uploads/2018/07/EN\\_Fintech-Report\\_Vienna\\_Business\\_Agency.pdf](http://www.fintechmatters.org/wp-content/uploads/2018/07/EN_Fintech-Report_Vienna_Business_Agency.pdf)