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# Transforming Payment Systems in Europe

Edited by

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*To all enthusiasts of monetary and payment systems*

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# Preface and Acknowledgements

Mobile and electronic wallets, instant payments, cryptocurrencies, big data, cloud computing, wearables, contactless, one-click buy, social media, the Internet of Things are buzzwords we hear and read about daily. They are gradually passing into the vocabulary not only of people who are savvy about technology but also of ordinary people who are keen to find out about everything the new products and technologies have to offer. This is *signum temporis* – unprecedented and accelerating changes in consumer and business habits driven by ongoing innovation.

The European and global payments landscape is undergoing a process of continuous transformation. Although it is difficult to predict any developments over a longer time horizon, in this book an attempt is made to evaluate the trends and problems, which will, with great likelihood, define the future.

The volume covers selected topical issues regarding payment systems in Europe. It contains eight chapters. Some discuss fundamental problems such as substitution between cash and non-cash payment instruments, payment costs, demand for cash/deposits and payment culture, while others focus on new phenomena such as two-sided platforms, interoperability, private digital currencies, decentralised ledgers, blockchain, mobile payments, the problem of attaining critical mass, regulatory challenges and competition between bank and non-bank payment service providers.

In Chapter 1, Jürgen Bott and Udo Milkau show how the payment system has evolved from cash-based to interoperable current account networks, centralised business platforms and finally to decentralised virtual currency peer-to-peer systems such as Bitcoin. They emphasise the impact of digitalisation, which has triggered a tremendous growth in payment services, helping new intermediaries emerge on the market and build on a safe and trusted banking infrastructure where money transfers are executed with non-cash payment instruments that include credit transfers, direct debits, payment cards and, more recently, hybrid payment mechanisms. Digitalisation has produced disruptive innovation in a two-sided market of payers and payees. Its structure has become more complex and multilayered. Sustainable growth goes hand in hand with dynamic disruption. The Single Euro Payments Area (SEPA) project promotes integration and the necessary standardisation in Europe. It

provides guidelines, rules and regulations for the traditional domain of competition between banks and non-banks (competition–cooperation nexus in retail payments) and for the competition between centralised payment platforms (traditional banking platforms, card payments platforms and alternative payment business platforms such as PayPal). Bott and Milkau detect a serious disruptive innovation gradually strengthening and gaining significance, i.e., decentralised payments in digital currencies with no need for bank intermediation and a central trusted authority (like the central bank). Such decentralised systems are based on a distributed, public and transparent ledger with the blockchain protocol. The authors assess the benefits and drawbacks.

In Chapter 2, Janina Harasim outlines general trends in the use of cash and non-cash payments instruments (e.g., credit transfers, direct debits, payments cards, cheques and e-money), describing changes in the payment mix both in Europe and globally. She includes useful and up-to-date statistics that are revealing about the demand for cash and cashless instruments in recent years. Harasim predicts a decline in cash usage and the development of cheaper and better alternatives, also in low-value transactions. She finds it important to address the problem of financial inclusion and financial education, which are the prerequisite for the development of non-cash payments. Furthermore, she sees a great potential in payment innovations such as contactless EMV cards, proximity and remote mobile payments, electronic wallets, e-credit transfers and e-direct debits. However, when it comes to ensuring the rapid diffusion of innovation, she highlights its key determinants, *inter alia*, addressing the problem of the critical mass, creating common technical standards, enhancing cooperation between payment stakeholders, and incentivising consumers and merchants. European regulations such as the revised Payment Services Directive (PSD2), the Interchange Fee Regulation (IF/MIF Reg) and national regulations on cash limits impact the retail payments market and its participants. As Harasim argues, the regulations' objectives are not always achieved, but their role cannot be underestimated. The crucial factor in driving cash out of circulation is consumers' willingness to change their payment habits.

In Chapter 3, Leo Van Hove verifies whether libertarian paternalism offers novel ways to discourage the use of cash by consumers. The interesting concept of libertarian paternalism or “nudging” originates from behavioural economics. It assumes that small changes to the choice context can impact consumer decisions, for example by steering consumers towards using particular payment instruments. Van Hove explains what is described as “nudging”, i.e., the provision of soft

incentives, and what is too strong or too intrusive to qualify as libertarian paternalism. When justifying the so-called war on cash (WOC), he refers to the central banks' studies on payment instruments' social costs, which show that cash is a pretty expensive means of payment compared to debit cards. Therefore, for policy reasons, its usage should be reduced. Further, Van Hove elaborates on the types of nudges that can be applied in the payments area by governments, central banks, commercial banks and merchants. There is little empirical evidence on nudging effects, however; four studies are discussed in this respect. He concludes by addressing the question of whether adopting the concept of libertarian paternalism in payments by making changes to the choice context is a promising avenue to explore.

In Chapter 4, Nikolaus Bartzsch and Franz Seitz empirically investigate whether cash is still the king, or whether card payments negatively influence demand for banknotes. They estimate the demand for euro banknotes issued in Germany using vector error correction models separately for small and high denomination banknotes and Dynamic OLS (DOLS) for medium denomination banknotes. Germany is the major issuer of euro banknotes to the Eurosystem, not only meeting the demand of its own country but also satisfying the demand from abroad. According to the data presented, over 70% of euro banknotes issued in Germany circulate outside its own territory, with the lion's share going outside the euro area. The growth in the cumulated net issuance of euro banknotes in Germany is almost entirely driven by foreign demand. Bartzsch and Seitz identify five reasons for holding cash: transaction, a store of wealth, availability of alternative means of payment (cards), size of the shadow economy and demand by non-residents. They test them econometrically by selecting adequate variables (sometimes proxies) in order to explain the demand for cash. The estimation results and conclusions are different depending on the category of banknotes (small, medium and high denominations). However, the study shows that cash is still an important payment instrument. The euro is held in high esteem outside of the euro area, as shown by the strong foreign demand for it. However, there are also other factors which, to a varying degree, determine the holding of banknotes. Seitz and Bartzsch, taking into account short- and long-term dynamics, estimate the impact of card payments in this respect compared to, among others, transaction and hoarding.

In Chapter 5, Nicole Jonker focuses on interchange fees in card payments or, more specifically, on their regulation in different countries. Interchange fees in four-party schemes are paid by acquirers to

card issuers. They have long been blamed for inflating the costs of card acceptance for merchants and indirectly for consumers, causing higher retail prices (two-sided market). After years of lawsuits and investigations, public authorities in different countries have decided to intervene by capping these fees and introducing other regulations aimed at bringing more transparency and competition to the payments market. Jonker discusses regulatory measures taken in Australia, the United States, Spain, Poland and most recently in the European Union, where they took the form of the Interchange Fee Regulation that entered into force in June 2015. Regulations are compared, revealing both similarities and differences. Jonker assesses their pros and cons and attempts to determine their impact on the payments market and its participants, primarily consumers and merchants.

In Chapter 6, Jakub Górká discusses what should be done to make the competitive position of non-bank payment service providers – payment institutions (PIs) and electronic money institutions (EMIs) – equal to that of well-entrenched players: the banks. He argues that several intertwining issues are of paramount importance: (1) the right to assign account numbers compliant with the IBAN standard; (2) access to designated payment systems and to central banks' infrastructure and (3) access to bank accounts by Third Party Providers (TPPs). These issues are analysed in the light of international standards and current legislation, including the revised Payment Services Directive (PSD2). Górká refers to the results of a survey he conducted on International Bank Account Numbers (IBANs)/International Payment Account Numbers (IPANs) in which he sought to establish which authorities in the SEPA countries are responsible for assigning bank identifiers/sort codes and whether non-bank PSPs are allowed to issue IBANs/IPANs to users' payment accounts. A theoretical risk assessment of PIs' and EMIs' activity is included with the aim of showing how new entrants differ from banks. Górká presents his opinion that newcomers play a significant role in fostering competition and innovation in the payments market in Europe and that their services, including mobile wallets (which, in the future, should become fully-fledged payment accounts with an instant payment feature), will bring value-added to consumers and businesses.

In Chapter 7, Malte Krueger deals with mobile payments. As he shows, they are subject to boom-and-bust cycles. Two m-payments waves are described, the first occurring before the dotcom crash in 2000, and the second happening right now. The booms are separated by a decade of stagnation. Krueger examines what is crucial for the successful rollout of

mobile payments in Europe. Reaching critical mass is not an easy task. He recognises impediments and mistakes of the past and diagnoses the current situation, starting with an analysis of new technologies such as Near Field Communication (NFC), Host Card Emulation (HCE) and tokenisation, all of which grow with the spread of smartphones and mobile internet. The success stories of m-Pesa, Apple and Square are presented, while attention is drawn to mobile P2P payments and real-time money transfers. Krueger also refers to the role of different payment service providers, including telcos, banks and shopping platforms. He explores the European policy, making critical remarks, and sums up by sharing his view on the future of mobile payments.

In Chapter 8, Harry Leinonen compares decentralised blockchain and common ledger-based payment systems, which are developing now, with the traditional centralised batch-based payment systems that have been in place for many years. Bitcoin, Litecoin, Peercoin and other virtual currencies are growing in number and are gaining popularity. They are thoroughly analysed in the chapter. Leinonen explains blockchain technology and makes clear that it could also be implemented elsewhere than in virtual currency systems, for example in traditional payment or securities clearing and settlement systems. He underlines the advantages of a decentralised blockchain ledger which could provide real-time payments with global reach in a cloud-based environment. Virtual currencies are methodically examined in terms of settlement medium, unit of account and financial instrument. Leinonen dispels some myths about Bitcoin concerning its cost, independence from third parties or the immediacy of transaction confirmation process. He also describes the Bitcoin system's shortcomings in the context of its value against national currencies and the attendant risks. What he sees as a challenge, but also an inevitable necessity, is bringing virtual currencies within the scope of regulation and supervision. Leinonen proposes licensing different types of activities performed in the virtual currency business with the aim to protect consumers and to ensure fair competition.

Each chapter has been written by academics and professionals from public and private institutions in five countries (Belgium, Finland, Germany, the Netherlands and Poland) with the aim of ensuring that the views presented are well balanced and show a variety of different perspectives. What is surprising and worth underlining is that all these perspectives smoothly complement each other. Payment systems in Europe are undergoing constant and multifaceted transformation. The many aspects of this process are analysed in this book.

I would like to thank my colleagues – the chapter authors. It was a pleasure to cooperate with all of them on this exciting project. I would also like to thank my editors at Palgrave Macmillan, who helped guide it towards publication.

# Notes on Contributors

**Nikolaus Bartzsch** works at the Deutsche Bundesbank, where his responsibilities include forecasting, modelling and decomposition of cash demand and analysing the cash cycle in Germany. He has published several articles on these issues. After his academic education in Economics at the University of Bonn, he took part in a trainee programme at the Hamburgische Landesbank. In 2000, he switched to the Economics Department of the Deutsche Bundesbank where he worked in the money market liquidity section and in the financial accounts section.

**Jürgen Bott** is a professor at the University of Applied Sciences in Kaiserslautern, Germany and a visiting professor and guest lecturer at several universities and business schools. He holds a PhD from the University of Frankfurt. Before his academic career he gained working experience with JP Morgan, the Deutsche Bundesbank and McKinsey. He is an academic advisor to the European Commission and member of a number of supervisory boards. He is a consultant for banks, their customers and international organisations, including the International Monetary Fund.

**Jakub Górka** is an assistant professor at the Faculty of Management, University of Warsaw, Poland. Currently, he is a member of the Payment Systems Market Expert Group (PSMEG) helping the European Commission to prepare legislative acts or policy initiatives on payment issues. He is the author of two books on payments and money, as well as numerous research papers, reports and business articles. He has prepared expert opinions for the National Bank of Poland, the Polish Ministry of Finance and private non-profit and commercial companies engaged in the payments business.

**Janina Harasim** is a professor at the Faculty of Banking and Financial Markets and Vice-Rector for Science, Research and Academic Staff Development at the University of Economics in Katowice, Poland. She lectures on bank competition strategies, payment systems and retail payments market. She is a member of the Polish Academy of Science. Her recent research focuses on issues related to retail banking, alternative financial services and the transformation of the retail payments market. She is the author and co-author of more than 120 publications on these

and other subjects. She is a member of supervisory boards and of The Coalition for Non-Cash Payments and Micropayments established by The Association of Polish Banks.

**Nicole Jonker** is a senior economist at the Nederlandsche Bank (Dutch central bank), Retail Payment Systems Policy Department. She has been involved in various empirical studies in retail payments. Her articles have appeared in *Applied Economics*, *De Economist*, *Journal of Banking and Finance*, *Journal of Economic Perspectives*, *Journal of Economic Behavior and Organization*, *Journal of Financial Market Infrastructures*, *Kyklos* and *Review of Network Economics*. She is also involved in policy work related to retail payment systems, including payment cards and interchange fees. She holds a PhD in Economics from the University of Amsterdam.

**Malte Krueger** is Professor of Economics at the University of Applied Sciences in Aschaffenburg, Germany and works as a consultant for PaySys Consultancy in Frankfurt. He holds a PhD in Economics from the University of Cologne. He has worked as a research fellow at the Bank of Spain, and at the universities of Western Ontario, Durham, Karlsruhe and Frankfurt as well as at the European Commission. His articles on payment issues have appeared in academic and industry journals.

**Harry Leinonen** is a financial counsellor in the Financial Markets Department at the Finnish Ministry of Finance, where his remit focuses on payment and settlement systems. He has, over the years, participated in several domestic and international committees and working groups on payments and securities settlement issues especially within the European Central Bank and Commission. He was attached to the Bank of Finland for several years in an advisory capacity, having previously worked in the Finnish banking industry for about twenty years in positions connected to payments system activities. He is the author of several articles and books on these issues.

**Udo Milkau** is the Head of Strategy and Market Development for Transaction Banking at DZ BANK, Germany. After graduating in Physics, he worked as a research scientist at CERN, CEA de Saclay and GSI. He holds a PhD from Goethe University, Frankfurt. Thereafter, he held management positions in the automotive industry and consulting firms before joining DZ BANK. He was also a part-time lecturer at Goethe University Frankfurt. He is a member of the Payments Services Working Group of the European Association of Co-operative Banks in Brussels and of the Operations Manager Contact Group (OMCG) of the European Central Bank (ECB).

**Franz Seitz** is Professor of Economics at Weiden Technical University of Applied Sciences, Germany. He holds a PhD from Regensburg University. Prior to joining academia, he worked at the Deutsche Bundesbank. He has published numerous articles in national and international journals, *inter alia*, on payment systems and cash topics. For many years he has been a consultant to the European Central Bank and the Deutsche Bundesbank.

**Leo Van Hove** is Professor of Economics at the Vrije Universiteit Brussel, where he teaches courses in monetary economics and the economics of information. His current research interests include payment instruments, network effects, e-commerce and access to finance. His articles on these and other subjects have appeared in the *Journal of Money, Credit, and Banking*, *International Journal of Electronic Commerce*, *Economic Modelling*, *The Service Industries Journal*, *Energy Economics*, *European Journal of Operational Research*, and *Journal of Media Economics*. He is invited regularly as a guest speaker by central banks and payment providers.