

In this issue:

- 1. Developments in Card Fraud
- 2. Are Domestic Card Schemes in the EU on the decline?

## Content

#### 1. Developments in Card Fraud

The ECB released a new Card Fraud Report this summer, albeit in a concise format. To conduct a more in-depth analysis, we have supplemented our insights with detailed French data. The introduction of Strong Customer Authentication (SCA) has, as revealed, successfully reduced overall fraud rates. However, this implementation incurred significant costs, both direct expenses and a rise in purchase abandonment. SCA not only lowered fraud risk but also shifted it from card issuers to cardholders -transitioning from professionals to amateurs. Moreover, the considerable variations in fraud rates on a national level and within SEPA underscore that effective risk mitigation is not solely a technical challenge.

#### 2. Are Domestic Card Schemes in the EU on the decline?

The Covid-19 lockdowns in 2020 led to a revival of debit cards and a terrain gain for most Domestic Card Schemes (DCS) in the EU. Following the end of the pandemic, International Card Schemes (ICS) such as Mastercard and Visa continue their catch-up race. The market share of the seven dominant DCS decreased from 49.8% (2020) to 48.1% (2021). Notably, DCS Multibanco in Portugal and Dankort in Denmark exhibit weakness, with concerns even raised about the potential discontinuation of Dankort in Denmark.

# Developments in Card Fraud

(mk) Recently, a number of reports on card fraud have been published, presenting an initially encouraging scenario. The latest European Central Bank report on "Card Fraud" for 2021 indicates an 11% reduction in fraud damages despite robust turnover growth. Consequently, the fraud rate in SEPA dropped to 0.028% (as a percentage of card turno-

primarily stems from a reduction in CNP fraud. In comparison to 2020, CNP fraud decreased by 12.1%, despite increasing turnover. The ECB attributes this decline unequivocally to the implementation of PSD2 and its requirements for Strong Customer Authentication (SCA). While SCA can be viewed as a success story, such an assessment should

be substantiated by a thorough analysis of the data.

Unfortunately, the "Report on Card Fraud" by the ECB is becoming increasingly concise, making indepth analysis challenging. Therefore, we will additionally rely on the French report on payment fraud for further insights. Issued annually by the "Observatoire de la sécurité des moyens de paiement" (OSMP), this report is much more detailed, already incorporating data from 2022, and provides fundamental analyses on the subject.<sup>2</sup>

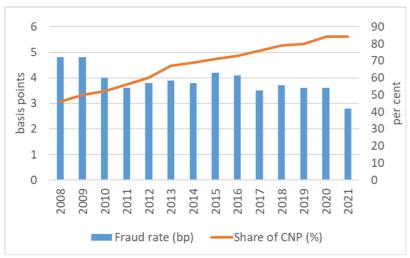


Fig. 1: Card Fraud in SEPA Source: ECB, Report on Card Fraud, Various Years

ver). The ECB reports this as the lowest value since the commencement of data collection on card fraud in 2008. In 2019 and 2020, this rate stood at 0.036%. The decline

# **Our Comment:**

The ECB's data reveals a decline in the fraud rate in 2021, particularly evident in Card Not Present (CNP)

transactions. The figures from OSMP for France not only confirm this trend but also indicate a further decrease in 2022.3 (Note: ECB data for 2022 is not yet available). In essence, both reports illustrate a consistent trend in the same direction (see Figure 2).

The deadline for the implementation of "Strong Customer Authentication" was December 31, 2020. Therefore, 2019 predates this deadline, while the years 2021 and 2022 follow. Hence, it is reasonable to attribute the decline in the fraud rate, as the ECB does, to the

introduction of SCA. However, since SCA pertains to remote transactions, it makes sense to examine fraud rates specifically in remote transactions.

Regrettably, the ECB report does not provide information on fraud rates in remote transactions, and such rates cannot be directly calculated. It can only be stated that fraud in Card Not Present (CNP) transactions decreased from 1.5 billion EUR in 2019 to 1.28 billion EUR in 2021. However, it's noteworthy that fraud in other areas (POS+GAA) also experienced a decline.

	2019	2021	2019 - 21	in %
total	1.87	1.53	-0.34	-18%
CNP	1.50	1.28	-0.22	-14%
rest	0.37	0.25	-0.12	-33%

Table 1: Card Fraud in SEPA (Billion EUR)
Source: ECB: 6th and 7th Report on Card Fraud, and
own calculations.

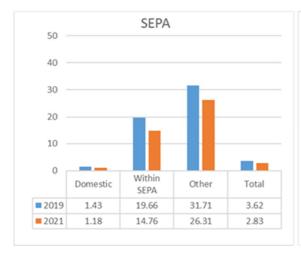
A more detailed analysis of the significance of SCA is only possible based on comprehensive data. Such data are available for France. The OSMP not only categorizes the CNP sector geographically but also based on the type of transaction processing. The OSMP distinguishes transactions with strong authentication ("3D secure"), transactions where SCA is possible, but the card issuer opts not to employ strong authentication ("3D"), and transactions where SCA is not possible ("without 3D"). However, this breakdown has only been available since 2021.

3D secure	3D	other
Strong Customer	SCA possible	Transactions
Authentication	but not applied	with merchants
(SCA) according	(exceptions un-	not SCA-ena-
to PSD2	der PSD2)	bled (i.e., out-
	,	side the EU)

Table 2: Three Security Levels for Internet Transactions. Please refer to OSMP, Rapport Annuel 2022, page 6.

A comparison with corresponding data from the period before the introduction of SCA regulations is unfortunately not possible. However, it can be assumed that in 2019, the proportion of transactions with SCA was still low.

The numbers illustrate, firstly, an overall significant reduction in the fraud rate in CNP from 2019 to 2022.



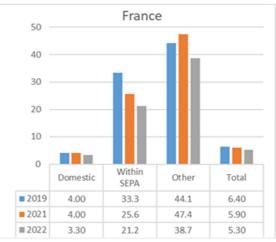


Figure 2: Card Fraud in the SEPA Area and France (in basis points) Source: ECB, OSMP, and own calculations.<sup>4</sup>

Secondly, the figures demonstrate the success of the new security architecture: "3D" leads to lower fraud rates, supporting the argument that the PSD2 regulations have indeed contributed to a decline in fraud.

Thirdly, interestingly, for domestic transactions, the failure rate with "3D" is lower than with "3D secure." This may potentially be explained by transactions falling into a lower-risk category where SCA is not mandatory. The conclusion is evident: it is reasonable for legislators to allow exceptions to SCA. However, for cross-border transactions, "3D secure" significantly outperforms "3D."

# It is reasonable for legislators to allow exceptions to SCA.

Overall, it is noticeable that there are significant differences between domestic and intra-SEPA transactions, even though both fall under the same regulatory framework. Surprisingly, an average domestic internet payment without 3D has a slightly lower failure rate (0.168%) than an intra-SEPA transaction with "3D secure" (0.208%). When "3D secure" is applied, the failure rate for an intra-SEPA transaction is approximately 2.5 times higher than for a domestic transaction (0.082%). The strong influence of geography—regardless of transaction technology—underscores the importance of not only considering technical solutions when addressing risks.

Finally, another aspect needs consideration, as highlighted by the OSMP. With the increasing use of SCA, cardholders lose the ability to dispute transactions. As noted by the OSMP:<sup>6</sup>

"In fact, with the implementation of strong authentication, the risk that a bank might refuse to reimburse a customer for fraudulent transactions may have increased significantly."

The issue is best illustrated through absolute fraud numbers. While SCA does enhance the overall security of card payments, fraud still occurs, particularly through the manipulation of payment instrument users by fraudsters. <sup>7</sup>

	2021	2021	2022	2022
	m €	share %	m€	share %
Internet	347	100%	316	100%
3D secure	103	30%	124	39%
3D	26	7%	26	8%
without 3D	218	63%	166	53%

Table 4: Fraud in Card Payments by French Cardholders on the Internet Source: OSMP

In 2022, the percentage of fraud cases in transactions with SCA was 39%. In 2021, it was at 30%, and it is likely to have been much lower in preceding years. From the cardholder's perspective, SCA is indeed a double-edged sword. Regulators recognize this, and their typical response, as history suggests, is to introduce more regulation.

In summary, SCA has reduced fraud rates overall. However, its implementation came with significant costs, both direct expenses and an increase in purchase abandonment. SCA has not only reduced fraud risk but also shifted it from card issuers to cardholders—effectively from professionals to amateurs.

Finally, the substantial differences in fraud rates at the national and intra-SEPA levels emphasize that effective risk mitigation is not purely a technical challenge. Instead of relying on technical solutions as a "silver bullet," a comprehensive risk management approach might be preferable. This is also the preferred path advocated by the card industry.

Fraud rates	ota	I trxs.
	_	

	2019	2022
POS	0.014	0.012
Distance wi	0.657	0.247
Internet	0.245	0.165
3D strong		0.11
3D		0.095
without 3D		0.321
ATM	0.031	0.032
Total	0.064	0.053

Fraud rates: National trxs.			
	2019	2022	
POS	0.010	0.010	
Distance wi	0.270	0.187	
Internet	0.167	0.099	
3D strong		0.082	
3D		0.070	
without 3D		0.168	
ATM	0.028	0.032	
Total	0.040	0.033	

Fraud rates: XB-SEPA trxs.

Trada rates rib cerri and			
	2019	2022	
POS	0.061	0.025	
Distance wi	1.159	0.447	
Internet	0.507	0.3	
3D strong		0.208	
3D		0.344	
without 3D		0.421	
ATM	0.03	0.032	
Total	0.333	0.212	

Fraud rates: Other trxs.

riadu lates. Other tras.			
	2019	2022	
POS	0.187	0.075	
Distance wi	1.263	0.479	
Internet	1.164	0.64	
3D strong		0.246	
3D		0.565	
without 3D		1.026	
ATM	0.168	0.046	
Total	0.441	0.387	

Table 3: France - Fraud rates as a percentage of turnover Source: OSMP and proprietary calculations. "Distance wI": Remote trade without the Internet (e.g., via phone). This category is quantitatively insignificant.

# Are Domestic Card Schemes in the EU on the decline?

(hg) European sovereignty in retail payment transactions is a significant topic on the EU policy agenda. Fragmented national payment systems and dependence on non-European payment systems, especially in card payments, are considered the main barriers to achieving European sovereignty, autonomy, and self-sufficiency. The magic formula is "public-private partnership."

Two initiatives aim to reduce dependence on non-European systems, such as Mastercard, Visa, PayPal & Co: the European Payments Initiative (EPI), led by a group of European banks, and the digital Euro (D€) by the European Central Bank (ECB).

It is noteworthy that both initiatives intend to build their structures more or less on the same foundation: real-time account-to-account (A2A) payments using smartphones as app-based payment instruments. In both cases, the card (analog or virtual) - if still necessary - is considered a second-best transitional solution for the die-hard traditionalists.

This is a bold, almost daring bet on an unknown future, considering that in the Eurozone, 49.3% (2021) of cashless payments are made using cards (trending upwards: +17.3% compared to 2020). Moreover, the adoption of smartphones as a new form factor, especially at the point of sale (face-to-

face), is still hesitant and slow among consumers. According to a market study commissioned by the ECB in 2022, only 3% of point-of-sale payments in the Eurozone were conducted with smartphones.<sup>8</sup>

For the time being, the traditional card business remains the focal point. What about sovereignty in this realm?

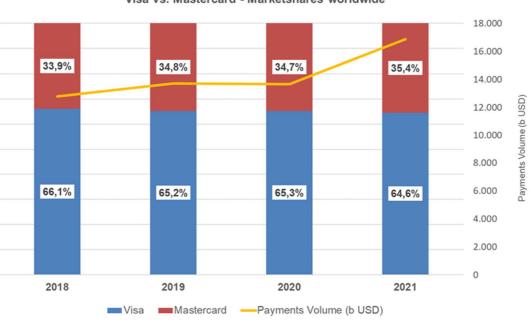
In the EU (27), the market is divided among 10 quantitatively significant card-based payment systems. Geopolitically, seven "European home-grown" schemes stand against the three "non-European" schemes: Mastercard, Visa, and Amex. Additionally, there are several smaller schemes (e.g., in Malta or Bulgaria) that can be neglected due to their low market penetration.

In this report, we regularly analyze the market share development of the "Big Ten" in the EU, most recently in edition 10 (December 2021). Below, we present the new results for the year 2021.

••

### Our Comment:

Taking a closer look at the figures of the American "duopoly" Mastercard and Visa in the card business, the term "giants" is unavoidable. In 2021, the global card payment volume (excluding ATMs) from these two schemes amounted to a staggering USD 16,869 billion.<sup>9</sup> This is roughly equivalent to the entire Gross Domestic Product of the EU (27) in the same period. It's worth



#### Visa vs. Mastercard - Marketshares worldwide

Graph 1 - Sources: Annual reports from Mastercard and Visa.

noting that Mastercard's figures do not include the quite substantial Maestro transactions, traditionally left out without reasons provided. In contrast to the development of national card systems (mostly debit card systems), the growth of Mastercard and Visa was significantly slowed down by Covid-19 in 2019-2020 (see Graph 1).

Although Visa remains the undisputed market leader with 64.6%, Mastercard has been steadily closing the gap in recent years. One reason for this gain in market share could be the gradual replacement of Maestro cards with Debit Mastercard (DMC), leading to these transactions now appearing in Mastercard's statistics.

#### Mastercard vs. Visa in Europe

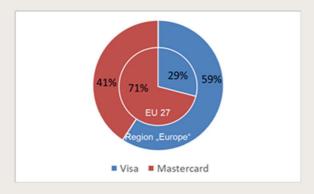
Analysing the market conditions of both schemes for Europe is more complicated. Both schemes publish

data for the "Europe" region, but the delimitation is different. Mastercard includes countries such as Albania, Serbia, Ukraine etc. under Europe ("Eastern Subregion"), while Visa subsumes these countries under CEMEA. The Nilson Report therefore estimates the Visa volume in Eastern Europe and adds the volume.

As a result, 24.5% of global sales are generated in Europe (in the broadest sense). Compared to the global volumes, the balance of power shifts in favour of Mastercard and amounts to 59.2% (Visa) and 40.8% (Mastercard). Maestro sales are also missing here. Mastercard is also steadily gaining market share from this perspective. 11

For our longer-term analysis of the market shares of the International Card Schemes (ICS) versus Domestic Card Schemes (DCS), we draw the circle much tighter and only consider the EU-27. In the EU-27, Mastercard (incl. Maestro) is now the clear market leader with 71%.

This result is primarily a consequence of Brexit. Before Brexit, the UK was the member state with the highest card sales in the EU. The Visa & Mastercard volume in the UK corresponds to approx. 80% of the volume of these schemes

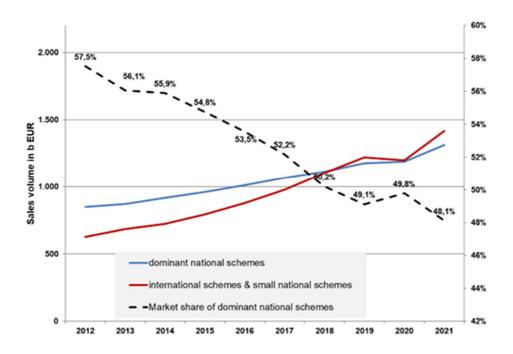


Graph 2: Mastercard vs. Visa in "Europe" and in the EU-27 Sources: Nilson Report and PaySys Card Market Statistics

#### ICS vs. DCS in the EU

The volume of card payments (excluding ATMs) through Mastercard and Visa in the EU-27 amounted to approximately €1,400 billion¹² in 2021, constituting 51.3% of the total turnover generated worldwide with cards issued in the EU (issuing perspective). Following the impact of COVID, the seven Domestic Card Schemes (DCS) were able to slightly improve their market share against International Card Schemes (ICS), rising from 49.1% in 2020 to 49.8%. However, in 2021, their share decreased to 48.1%. The long-term trend clearly indicates a gradual but continuous decline in the market share of DCS compared to ICS. See graph 3.

In our latest PaySys Report No. 2 (2023), we shed light on the developments in the German market. Due to the increase in "new debit" cards from International Card Schemes (ICS) becoming the standard card for the current accounts of some major internet banks (such as ING), the German Domestic Card Scheme (DCS)



Graph 3: Market Shares of ICS and DCS (7) in the EU-27 based on issuing card payment volume ("purchases") 2012-2021; Sources: Data from Card Schemes, ECB, and our own calculations.



# The DCS market share decreased in 2021 to 48,1%.

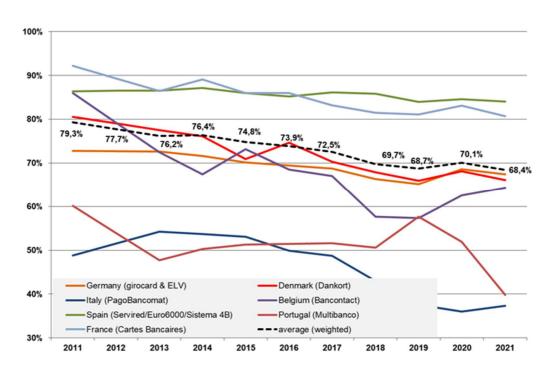
The long-term trend clearly indicates a gradual but continuous decline in the market share of DCS compared to ICS.

"Girocard" is losing market share despite impressive growth rates.

In the seven relevant member states with notable DCS (BE, DE, DK, ES, FR, IT, and PT), the (weighted) market share decreased from 70.1% in 2021 to 68.4%. However, the trend is not homogeneous across these countries. See graph 4.

The Italian scheme "PagoBancomat" and the Belgian scheme "Bancontact" have shown stronger growth in 2022 compared to the ICS.

On the other hand, the Portuguese "Multibanco" has been a cause for concern as it has rapidly lost market share since 2019 (57.7%) and reached 39.8% in 2021. The debit card system, operated by the bank-owned joint venture Sociedade Interbancaria de Servicos (SIBS), seems to have overlooked or underestimated the trend toward contactless payments. Almost all Multibanco cards are co-badged with Mastercard or Visa. Contactless payments at the point of sale (POS) and mobile payments, when the card is linked to Apple Pay or Google Pay, are currently technically feasible only with international brands. The Portuguese setback has significantly contributed to the reduction of DCS market share in the seven member states. Without Multibanco, the market share would be at 69.9%.



Graph 4: Market shares of DCS in the respective member states as a percentage of the payment volume of cards issued by domestic Payment Service Providers (PSPs) (2011-2021); Sources: Data from Card Schemes, ECB, and our own calculations.



#### Is the end of Dankort approaching?

Another cause for concern is the Danish debit card system, "Dankort." In our previous EPCA Report No. 6/2020, our EPCA partner Henning Jensen<sup>13</sup> provided insights into the developments in the neighboring country. While the system continues to grow, the growth rate in 2021 (6.1%) compared to International Card Schemes (ICS) is below average, leading to a decline in market share (2021: 66%). The growth in 2022 was only 1.9%, and the preliminary figures for Q1-Q3 2023 indicate a noticeable decline.

However, there are other reasons that seriously jeopardize the existence of the system at present. Dankort has a long history, founded in 1983 by Danish banks more or less as an act of self-regulation due to political pressure.

The Dankort Scheme has lost the collective interest of Danish banks, consumers, and politicians.

The level of merchant fees remains a political issue to this day: cost-based with a small profit margin for the operator and sole acquirer Nets. A decrease in Dankort transactions may potentially result in an increase in merchant fees due to the decline in economies of scale. Currently, merchant fees in most segments are still lower than the fees for accepting ICS and range from 0.16% to 0.46% (small merchants).

The system also lacks an interchange fee as a revenue source for the issuing bank. More and more banks are abandoning the card and offering the more lucrative ICS debit card (with interchange fees) for issuers.

Currently, there are 4.7 million Dankort cards (94% co-badged with Visa) compared to approximately 3.7 million ICS debit cards.

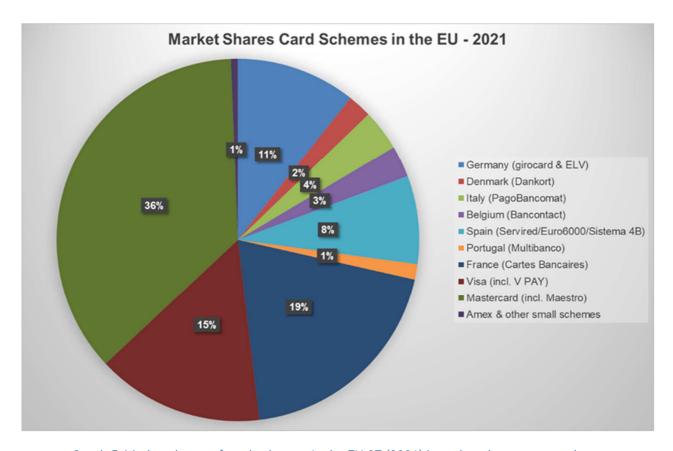
The operator Nets has not been a Danish or at least a Scandinavian company for almost 10 years. Due to the sale of Nets to the European player Nexi, the system operator lost its Danish genes completely by 2021. The question arises as to whether Nets/Nexi still has a financial interest in continuing the Dankort system.

There is a 2019 agreement between the largest Dankort issuer Danske Bank and Nets to maintain the Dankort system, the content of which is not publicly known. Observers suspect that Danske Bank has committed to supporting the Dankort system. However, this agreement is set to expire next year.

Little investment has been made in the Dankort system in recent years. Compared to ICS cards, there is a lack of innovation, and the system is relatively outdated. For example, the Dankort card has a system-imposed spending limit of approximately €4,000 within 30 days and a maximum cash withdrawal amount of around €270 per day.

Everything points to the fact that the Dankort Scheme, operated by a foreign company, has lost the collective interest of Danish banks, consumers, and politicians. While merchants have a significant interest in maintaining the system due to the favorable fees, they have not engaged in corresponding lobbying efforts so far.

Some Danish newspapers are already suggesting a funeral for Dankort. According to Danish card expert Henning Jensen, "the Dankort-system most likely is going to be gradually more or less terminated in the period 2025 to 2028".



Graph 5: Market shares of card schemes in the EU-27 (2021) based on the payment volume (excluding ATM) of cards issued in the EU. The total volume is €2,730 billion.

Sources: Data from card schemes, ECB, and our own calculations<sup>14</sup>



#### **Footnotes**

- ECB: Report on card fraud in 2020 and 2021, Frankfurt 2023 (https://www.ecb.europa.eu/pub/cardfraud/html/ecb.cardfraudre-port202110~cac4c418e8.en.html)
- 2. Rapport annuel de l'Observatoire de la sécurité des moyens de paiement 2022 (https://www.banque-france.fr/liste-chronologique/rapports-dactivite).

  The report is currently available only in French as of early October 2023. An English version is expected to be available shortly.
- 3. When comparing France to SEPA overall, it is noticeable that fraud rates in France are consistently higher than the average for SEPA countries. The same applies to the United Kingdom. Apparently, larger markets are more attractive to fraudsters than markets with lower population and card usage per capita.
- 4. The ECB publishes rounded figures, making it somewhat challenging to calculate fraud rates. For instance, the share of cross-border transactions (XB) outside of SEPA decreased from approximately 2% to around 1% between 2019 and 2021. Since halving the percentage is not very plausible, it was assumed for the fraud rate calculation that the share decreased from 1.6% to 1.4%.
- 5. 2020 is a transitional year heavily influenced by the Covid lockdown. Therefore, the data for 2020 are challenging to interpret and will not be considered in the following analysis.
- 6. Observatoire de la sécurité des moyens de paiement: Recommendations of the observatory. Procedures for reimbursing fraudulent payment transactions, 2023, p. 2.
- 7. A brief overview of this type of fraud can be found in: OSMP, Recommendations, p. 2.
- 8. See: ECB, Study on payment attitudes of consumers in the euro area (SPACE 2022), <a href="https://www.ecb.europa.eu/stats/ecb\_surveys/space/html/ecb.spacereport202212~783ffdf46e.en.html#toc11">https://www.ecb.europa.eu/stats/ecb\_surveys/space/html/ecb.spacereport202212~783ffdf46e.en.html#toc11</a>. According to the Worldpay Global Payments Report (May 2023), the share of contactless payments as a percentage of POS turnover in "Europe" was reported to be 10% in 2022 (p. 75). These figures are only compatible with the ECB data if the share outside the Eurozone is significantly higher. The report anticipates a doubling to 20% by 2026.
- 9. Sources: Annual reports of both schemes.
- 10. See Nilson Report Issue 1221 June 2022 The figures are also based on the volume of payment transactions in USD. Sales in Israel are excluded for both schemes
- 11. According to the Nilson Report, Mastercard's market share in 2019 was 37.7% and Visa's 62.3%.
- 12. The datasets from Mastercard and Visa still include transactions in Spain and France that are systematically attributed to their respective Domestic Card Schemes (DCS) based on the rules of each scheme. Despite these transactions being assigned to the DCS, they generate fee income for the International Card Schemes (ICS). In this analysis, these transactions are exclusively assigned to their respective DCS. For further details, refer to the Appendix "Market Shares of Card Schemes in the EU," PaySys Report No. 10 (2021), p. 7.
- 13. Henning Jensen has also contributed valuable information to this article.
- 14. The debit card transactions missing from the ECB statistics, processed through ELV in Germany via the Girocard, have been added.



#### Should you have any questions or comments please contact:

Dr. Hugo Godschalk (hgodschalk@paysys.de)
Dr. Malte Krueger (mkrueger@paysys.de)

Please, send us your views to: paysys-report@paysys.de

#### PAYSYS REPORT IMPRINT

#### PaySys Consultancy GmbH

Im Uhrig 7

60433 Frankfurt /Germany Tel.: +49 (0) 69 / 95 11 77 0 Fax.: +49 (0) 69 / 52 10 90 email: paysys-report@paysys.de www.paysys.de

PAYSYS REPORT

November 2023

© PaySys Consultancy GmbH

Subscribers are not allowed to copy or to distribute this newsletter outside their companies without permission of PaySys Consultancy.

Disclaimer: PaySys Consultancy sees to the utmost reliability of its news products. Nevertheless, we do not accept any responsibility for any possible inaccuracies.



PaySys Consultancy is German member of

#### Subscription info:

The PaySys Report is published 5 times a year in English and German in electronic format (PDF) and contains about 5-7 pages. The price is 250 euro per year (company license).

To order, please send an email to paysys-report@paysys.de

