

Geldmaat: An example of ATM pooling in the Netherlands

Received (in revised form): 9th December, 2021

Erik Kwakkel*

Chief Executive Officer, Geldmaat, The Netherlands

Victor de Wolff**

Chief Financial Officer, Geldmaat, The Netherlands

Erik Kwakkel is Chief Executive Officer of Geldmaat, where he is jointly responsible for the day-to-day management of the organisation. As line manager for Geldmaat's corporate office, he oversees such departments as strategy & business development, internal audit, technology & architecture, and security. Kwakkel previously worked at Rabobank for over 30 years, in such roles as Executive Vice President of Payment Services Operations and Senior Vice President of Cash, Cards, e-Commerce & Savings, among others.

Victor de Wolff has been Chief Financial Officer for Geldmaat since it was first established in 2019. As well as being responsible for its financial policy, he manages the legal, risk & compliance, finance and administration, treasury and procurement departments. His previous experience includes almost ten years as Finance Director of GSN, Geldmaat's legal predecessor, and over 20 years in various positions at ING.

ABSTRACT

Geldmaat was established by ABN AMRO, ING Bank and Rabobank in 2019. After three years of working together, the three banks retired their respective automated teller machines (ATMs) on 1st October, 2021, replacing them with a network of ATMs owned and operated by Geldmaat. By combining forces to create Geldmaat, the banks have ensured that cash will continue to be available and accessible over the coming years. Nevertheless, the future of the cash chain in the Netherlands remains a topic of much discussion. This paper explains the transition process, from the initial steps in the pooling process to the rollout itself, in

addition to the services now offered by Geldmaat. It then goes on to discuss the future of the cash infrastructure in the Netherlands.

Keywords: cash, digitisation, ATM pooling, cash chain

INTRODUCTION

The use of cash in the Netherlands has been declining for years, in large part due to the rapid inroads made by digitisation. The recent COVID-19 pandemic has only accelerated this trend. As a result, only around 20 per cent of all point-of-sale (POS) payments in the Netherlands in 2020 were made in cash.¹

Nevertheless, cash payments remain an important method of payment in the Netherlands, and it is seen as vital, partly for social reasons, for the country to maintain a properly functioning cash infrastructure.

Although the total costs of operating the cash chain have fallen in recent years (from around €1.5bn in 2012 to around €1.2bn in 2019), the lower volume of cash payments being processed has resulted in the costs of individual cash transactions at the POS rising from €0.40 per transaction in 2012 to around €0.50 per transaction in 2019.²

This paper outlines the phased steps taken over the past ten years to adapt the Dutch cash infrastructure to better reflect society's needs, and how these steps have led to the establishment of the Geldmaat automated teller machine (ATM) network, which operates at arm's length from the banks. It also discusses the challenges and lessons learned



Erik Kwakkel



Victor de Wolff

Geldmaat, Postbus 5052,
1380 GB Weesp,
The Netherlands

*E-mail: erik.kwakkel@
geldmaat.nl

**E-mail: victor.de.wolff@
geldmaat.nl

Journal of Payments Strategy &
Systems
Vol. 16, No. 1 2022, pp. 75–85
© Henry Stewart Publications,
1750–1806

during this period, as well as the feasibility study on the Dutch cash infrastructure that the Dutch Central Bank (DNB) and the National Forum on the Payment System (NFPS) commissioned McKinsey to compile.

HISTORY OF COOPERATION IN THE CASH CHAIN

The first step in the ATM pooling process dates back to the decision taken by ABN AMRO and Rabobank to combine their cash-processing activities in a joint venture, known as Altajo. They were joined by the third bank, ING Bank, on 1st February 2011. Altajo then became part of the new Geldservice Nederland (GSN), which became operational on 1st October 2011, with these three banks as shareholders. From then on, GSN was responsible for handling the various cash-processing services for these banks.

The banks and GSN spent most of 2013 and 2014 considering how best to shape the next stage of their cooperation, and specifically how to transfer their ATM cash logistics management to GSN. It was decided that the banks would start by continuing to own their ATMs and being responsible for their branding, locations and IT infrastructure. As well as being responsible for the above cash-processing activities, GSN would be responsible for cash management, transport, servicing, remedying disruptions, repairs, and maintaining the three banks' ATMs and vaults. GSN signed contracts with specialised parties in the market for the operational side of these activities.

During the GSN period, this cooperation was not visible to end users (i.e. the banks' retail and business banking customers). Each ATM continued to be branded according to the relevant bank's marque. There were also no changes for customers of other banks, who could continue withdrawing banknotes via the card schemes, but could not deposit banknotes (wrapped or otherwise) or

withdraw or deposit coins at banks other than their own bank.

Competition

A lot of consideration was given to the issue of competition law when setting up GSN. This included preparing a self-assessment with a firm of lawyers and submitting it to the regulator, the Dutch Authority for Consumers and Markets (ACM). This self-assessment included a presentation of GSN's business model to the ACM from a competition law perspective. After various questions had been answered, the ACM provided tacit approval for the joint venture to proceed. (As the ACM never gives formal permission for joint ventures, this informal 'green light' is the highest level of approval available.)

In September 2012, one of the three cash-in-transit (CiT) companies in the Dutch market filed a complaint against GSN with the ACM. Essentially, this alleged that GSN was in a position of power in the market and was abusing it. The ACM ruled this complaint to be unfounded. The subsequent appeals to the ACM and the administrative court were also dismissed. Although these legal proceedings were very time-consuming, they ultimately strengthened GSN's position from a competition law perspective.

Market developments

The cooperation between the three banks and the establishment of GSN meant substantial changes for various parties in the market. These changes were not only attributable to the joint venture, but also the result of developments in the cash market itself.

The size of the cash market decreased substantially between 2011 and 2020.³ In terms of the number of cash withdrawals, the market was 63 per cent smaller in 2020 than in 2011, and shrank by 43 per cent between 2011 and 2019. While the years 2012–2014 saw an average annual decline of 4.5 per

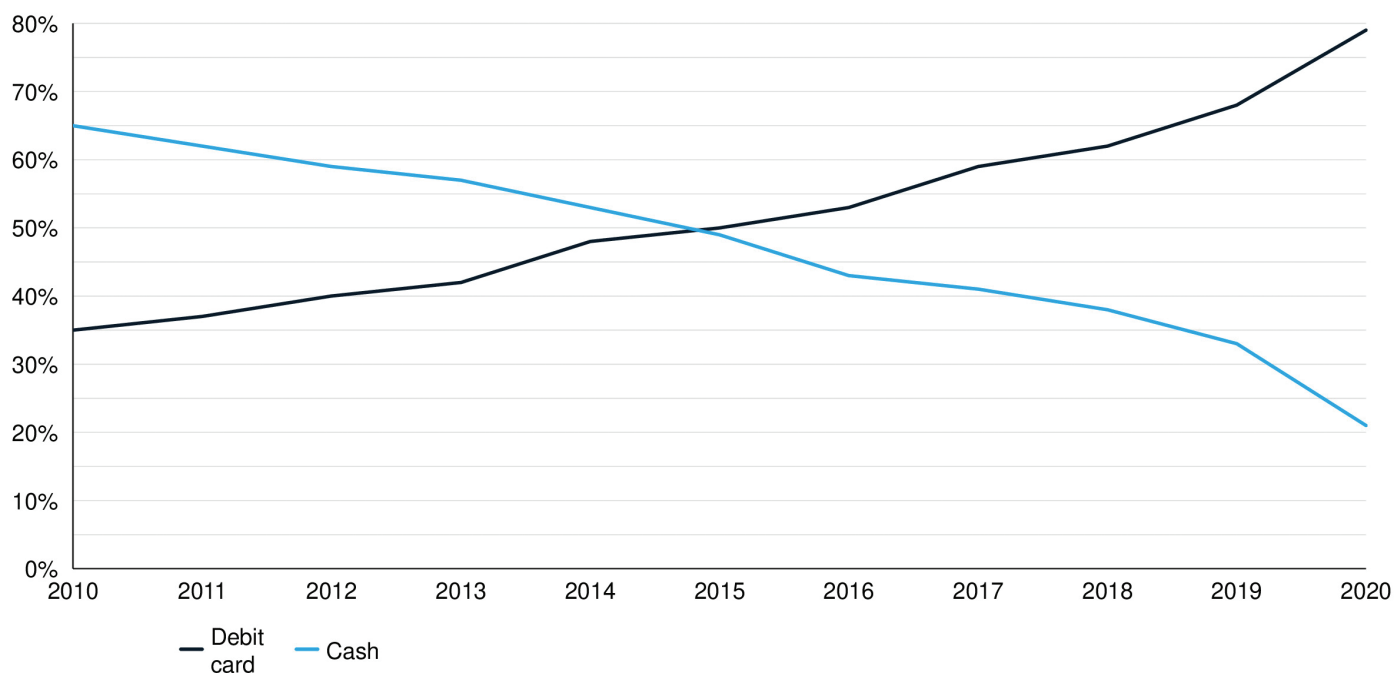


Figure 1: Evolution in use of POS payment methods (%)

cent, this accelerated between 2015 and 2019 to an average decline of 8 per cent per year. The COVID-19 pandemic then accelerated the rate of decline, with the number of cash withdrawals falling by a further 35 per cent in 2020. A similar trend may be observed in the number of POS payments (see Figure 1).

Logistics management

When arranging to take on responsibility for managing the logistics, GSN issued a request for proposal (RfP) for the operational side of the cash transport, servicing and maintenance activities. At the time, there were three CiT companies active in the Dutch market, but due to changing market conditions, ultimately only one remained. Specifically, one of the parties left the Dutch market after not being selected in the RfP process, while the other party left the market a few years later due to the decline in the market and the impact of this on their business model.

Issues and lessons learned

If a joint venture such as GSN is to succeed, it must have the full commitment of the various partners' directors. During the GSN period, therefore, bank directors and DNB attended various behind-the-scenes consultations. Although the directors met on only a few occasions, these consultations proved to be a very good way of maintaining momentum and, where necessary, providing support.

The main challenge in transferring responsibilities from the banks to GSN related to major operational differences and the differing extent of outsourcing. GSN sought to standardise processes as much as possible in order to ensure cost-efficient cash logistics. The important thing for the banks was to achieve their business cases. The fact that each bank had a different starting position on outsourcing was one reason for each of them having a different business case. Monitoring and reporting on the business

cases helped to demonstrate the success of the joint venture.

MOVING TO ATM POOLING

After the cash logistics processes in the banks' ATM networks had been merged, the next logical step was to focus on synergising their policies on where to install new ATMs. Before 2016, and regardless of competition-related sensitivities, there was insufficient support among the banks themselves for ATM pooling. The main argument against ATM pooling was that the ATMs represented the banks' physical presence in local communities and hence also served to promote their brands. Standardising the ATMs meant that, at a time of decreasing numbers of bank branches and increasing digitisation, the banks would lose yet another opportunity to promote their brands.

In late 2016, however, views on this matter began to change. GSN's supervisory board then decided to commission a feasibility study on ATM pooling, which consultants from McKinsey started conducting in January 2017.

The Cash2020 programme

As an outcome of this feasibility study on ATM pooling, it was decided to set up a separate Cash2020 project to avoid overlap between 'Run' (the GSN operation) and 'Change' (the procedure for building Geldmaat).

The Cash2020 project ran at arm's length from the existing GSN operations and reported to a transition board, comprising the GSN board, representatives of the three shareholding banks, and DNB. The project was overseen by a project director. Various workstreams were defined as part of the project, including legal, the joint-venture agreement, procurement, security, finance, products, processes, IT architecture, and communications and public affairs. These

workstreams were managed by external professionals and staffed by representatives of all the direct stakeholders (ie GSN/Geldmaat, ABN AMRO, ING, Rabobank and DNB). The workstream leaders reported directly to the Cash2020 project director.

Lesson learned

The most important lesson learned from this approach is that the importance of stakeholder management at both an operational and tactical level should not be underestimated. This is because the specialists/representatives of the individual banks often push for operations to roll out according to the plans they have made beforehand, and this can make them less receptive to other possible solutions. While this is certainly understandable, it can make it hard, particularly for workstream leaders, to get views to converge and to get everyone 'on the same page'.

Stakeholder management and support

DNB expects banks to ensure that payment systems are inclusive, with consumers' freedom to manage their financial affairs being of paramount importance.

From an early stage it became clear that professional stakeholder management would be important if the three banks' ATM pooling initiative was to align with what society wanted. At the start of Cash2020, therefore, it was decided to set up a sounding board group. This group's main task would be to ensure the various parties cooperating in the NFPS were structurally engaged in the project for transitioning the banks' ATMs to Geldmaat. Organisations representing societal stakeholder interests were closely involved in various technical and visual developments for the new ATMs. These stakeholders included representatives of the elderly and people with visual impairment, who were invited to give direct input on the ATM design and software. This input resulted in various changes, including



Figure 2: Logos of Geldmaat, ABN AMRO, ING and Rabobank

changes to the screen design to meet the needs of users with impaired sight or low literacy. A voice function was also included in all new ATMs.

A new, standalone brand

Bringing the whole package of cash-related services into a new organisation that would operate at arm's length from the banks meant creating a new brand. The three large banks chose to create a new, clearly recognisable brand — Geldmaat — for their ATM pooling.

They consciously chose to make the look and feel of this new brand different from their existing brands. This was reflected in the colour (yellow) and the striking design chosen for the ATMs, and also in the text used on the Geldmaat website and the ATM screens. The new brand comes across as user-friendly and welcoming. The biggest challenge for the new brand is building consumer trust in the new ATMs. Throughout the migration period, therefore, it was continually emphasised that Geldmaat is a joint initiative of the three banks. Using the ABN AMRO, ING and Rabobank logos played an essential role in this process as it meant creating a new brand independent of but associated with well-established brands, and this created trust and confidence in the brand (see Figure 2).

Consequences of ATM pooling

The consequences of ATM pooling have varied from party to party. Retail banking customers and retailers now see a new ATM brand in shopping centres, while the bank-branded ATMs have disappeared. Customers

of banks other than the three banks participating in Geldmaat can use the ATMs for withdrawing cash via the card schemes. ATM pooling means ABN AMRO, ING and Rabobank customers now have access to a larger network for depositing banknotes (wrapped or otherwise), whereas previously they could deposit notes only in ATMs at branches of their own bank.

Parties active in the cash-processing market also have more opportunities than before — when every bank operated its own services in the market — because Geldmaat now makes more concentrated use of the services these parties provide. Unfortunately, this represents a threat to other parties, particularly given that the market is shrinking anyway.

DNB sees the initiative as a good way of ensuring the long-term availability and accessibility of cash, as well as of optimising and improving services in a way that would not have been possible had each bank continued to act alone.

Lastly, ATM pooling has given Geldmaat the opportunity to show that combining knowledge and expertise in the cash market can create efficiencies for all parties involved. The fact that Geldmaat handles all the cash-processing services for the banks' customers takes pressure off the banks and ensures the optimal use of opportunities.

Who owns the money?

One of the questions arising when Geldmaat was being set up related to ownership of the money in the cash system, ie cash in the ATMs, cash in transit and cash in the cash centres, but also funds in non-cash transfers.

Although this issue may initially seem fairly easy to deal with, in practice it proved to be very complex, given the various implications from a business economics, legal, tax, organisational and financing perspective. It was consequently decided to set up a special work group to deal with this aspect as part of the Cash2020 project.

The Cash2020 Transition Board decided to set up a partnership ('community') of banks (ABN AMRO, ING and Rabobank) and to make this partnership the owner of the cash and non-cash funds in the system, with Geldmaat being appointed to manage this partnership. A partnership agreement was then drawn up to record all the partners' rights and obligations. The tasks and responsibilities of Geldmaat as the manager of the partnership were set out in a separate management agreement. As each bank must account for its share in the partnership in its financial reporting, Geldmaat's management responsibilities include providing each bank with a daily balance sheet report. Geldmaat has appointed a treasurer, who is responsible for managing the money. Geldmaat also oversees the work involved in reconciling the transaction-processing activities.

ABOUT GELDMAAT

GSN was transformed into the new organisation — Geldmaat — on 1st January, 2019. As Geldmaat has chosen to be a steering body, it will not perform all its services itself, but will instead outsource many of them to partners. The parties selected as partners will specialise in the specific services being outsourced and, because of their size and focus, will be able to provide better quality and operate more cheaply than Geldmaat itself could. Examples of outsourced services include transaction-processing, transport and ATM maintenance and security.

Geldmaat has compiled a target operating model setting out which elements of services

can and cannot be outsourced, while choosing to continue performing strategically relevant services itself. If it is to perform its directing function properly, Geldmaat must ensure it has sufficient in-house expertise readily available to procure services from partners and manage these services effectively.

Moving to a single 'look and feel' in the market

Before ABN AMRO, ING and Rabobank decided to merge their ATMs into a single umbrella brand, all three banks had their own ATMs with their own characteristic branding. GSN was the provider of operational logistics for these banks behind the scenes and hence unknown to the public. The establishment of Geldmaat, which has now taken over the banks' entire stock of ATMs, means the Netherlands now has a uniform, standardised network of ATMs for the three participating banks.

Geldmaat is the leading market brand for consumers and businesses wanting to withdraw or deposit cash. Geldmaat ATMs can be found not only outside bank branches, but also in many national retail stores. In this way, Geldmaat has established a highly visible presence and is the direct point of contact for millions of users and hundreds of partners in the Netherlands.

Geldmaat's mission, vision and strategy

Mission

Geldmaat is very aware of its responsibility for key infrastructure of critical importance in the Netherlands and that many people in society — private individuals and businesses alike — rely on its services. By directing the cash chain, Geldmaat is able to be *the* cash service provider in the Netherlands.

Vision

Geldmaat ensures that, in the Netherlands, cash remains accessible, available, affordable



Figure 3: Geldmaat store

and secure, and does so in a socially responsible manner. Its focus is on ensuring the right customer experience for end users, and on taking account of all the groups in society relying on its services. Geldmaat's core values are cooperation, ownership and transparency.

Strategy

Geldmaat provides high-quality cash services through standardisation and rationalisation, and by continuing to optimise and innovate the ATM infrastructure. It is also mindful of the international market in which the provision of cash services operates. Its services are available to other banks in the Netherlands.

Geldmaat's role in society

Geldmaat's activities meet a clear need in society. Geldmaat's basic principle is that its ATMs should be recognisable and accessible

to everyone, and especially for the elderly and people with visual impairment or low literacy levels. The new ATMs therefore comply with the European Accessibility Act 2019⁴ and have a uniform screen design, using as little text as possible, along with pictograms as appropriate. Geldmaat also includes a voice function in the new ATMs, as well as offering extra assistance to people who may be uncertain about using the new machines.

In large cities, where installing an ATM in the public space can be problematic, Geldmaat has opted for safe, easily accessible indoor locations (*geldmaatwinkel*, or the 'Geldmaat Store'), where ATMs for all Geldmaat services can be found (see Figure 3). The ATMs for withdrawing banknotes can be used by anyone, regardless of where they bank. The other ATMs (for depositing notes, withdrawing and depositing coins, and depositing sealbags) are currently available only for customers of the three shareholding banks.

Issues and lessons learned

Delay

It ultimately took a year longer than originally anticipated to complete the Cash2020 project. The three main reasons for this delay were:

- In the past, banks all devised their own solutions. Although these solutions appeared superficially similar, a detailed examination revealed many differences. Reaching agreement on a new common standard consequently took longer than expected.
- During the project, both Geldmaat and the three banks experienced a wave of ram-raids on ATMs. This made it more difficult to find locations to install the new ATMs due to opposition from people living nearby as well as from municipalities themselves.
- The COVID-19 pandemic meant that the original migration plans could no longer be used because it was not possible to ensure that staff would be able to keep the required 1.5 metres apart. The amended migration plans were less efficient and therefore resulted in slower migration.

Affordability (VAT)

VAT on Geldmaat services is an issue that specifically affects the affordability of the cash infrastructure. Geldmaat holds that its services should be VAT-exempt and has raised this issue with the Dutch tax authorities. The tax authorities initially confirmed this view, subject to the European Court of Justice's judgment in the *Cardpoint* case. Following the *Cardpoint* judgment,⁵ however, the tax authorities ruled that, from October 2019, the services that Geldmaat provides to the banks would be liable for VAT rather than VAT-exempt. Given that only a fraction of the VAT paid can be deducted by the banks as input tax, this decision unfortunately means a substantial increase in cash-chain costs.

Security

Taking over the three participating banks' ATMs required Geldmaat to deal with three different ways of handling the security issues associated with cash facilities. Each bank had its own processes, protocols, systems, hardware and software, and visible and invisible security measures. When taking over the ATMs and vaults, as per the agreement with the banks, Geldmaat continued to respect the individual bank contracts. This meant having to deal with a multitude of different suppliers and solutions. From the start, Geldmaat held meetings with all the suppliers to explain its envisaged route for moving towards harmonisation and standardisation. Work was undertaken in various phases aimed at agreeing on a uniform way forward for security, and this has now been approved by all parties involved.

Criminals in the Netherlands have recently been using powerful explosives in their attacks on ATMs and this has increased concerns about the installation of ATMs in residential areas. The strong opinions held by central and local governments and various societal organisations on this issue have resulted in new insights and solutions, with Geldmaat now installing more in-store ATMs in retail premises and fewer through-the-wall ATMs than the banks. Other solutions include the Geldmaat Kiosk and Geldmaat Store. Geldmaat has also taken steps to improve ATM security and arrange for night-time closures. All these measures are aimed at making ATMs less attractive to criminals, and the initial results are certainly promising.

Standardisation

Each of the three participating banks had its own views on services, processes and IT infrastructure. Although all three expressed their support for standardisation when setting up Geldmaat, things turned out to be more complicated in practice.

As well as developing a new IT infrastructure for Geldmaat, it was also important to focus on standardising services and processes, with each bank's wishes and requirements having to be respected. Geldmaat, the banks, societal organisations and regulators put a lot of time and effort into agreeing on a set of simplified products and services that would be acceptable to all parties.

It should also be noted that these discussions resulted in initiatives being devised and implemented to significantly improve the customer experience of specific user groups. These included innovations such as voice assistance for people with a visual impairment, changing the colour and size of the ATM screen and keyboard, and providing extra assistance at selected retailers with in-store ATMs to help vulnerable people, such as the elderly or those who find dealing with technology difficult or have low literacy. Given its role in society, Geldmaat firmly believes in the importance of aiming for inclusivity.

THE FUTURE OF THE CASH INFRASTRUCTURE IN THE NETHERLANDS⁶

The use of cash at the POS in the Netherlands is declining, and the cash infrastructure is under pressure. In 2020, the NFPS therefore reviewed its position on cash. The NFPS considers that 'in an environment of increasing electronic payments, it is important from a social point of view to ensure that cash continues to function well as a means of payment for point-of-sale purchases'.⁷ To this end, the NFPS members made (temporary) agreements on the accessibility, availability and acceptance of cash. At the same time, the Forum advised DNB to commission an independent external study into the country's cash infrastructure, with a view to defining and designing a socially efficient, solid and secure cash infrastructure for the medium-to-long term, even when

the use of cash is low. The aforementioned agreements are to be reviewed based on the results of the study.

At the end of 2020, DNB commissioned McKinsey to carry out the study.

Summary of the study

The McKinsey report foresees a further decline in the use of cash. In order to determine whether this is a problem, it distinguishes three functions of cash:

- *fall-back*: for the time being, cash is the only fall-back option in the event of failure in the electronic POS payment system — albeit only partly, due to the fact that the cash infrastructure is already shrinking;
- *inclusiveness*: people in vulnerable groups are often dependent on cash as a means of payment; and
- *public money*: cash is a claim on the central bank and can be used by anyone wishing to do so.

The report argues that these functions may gradually decrease or disappear with the introduction of other, digital means of payment, depending on the extent to which these are accepted. This may change the requirements that are necessary to ensure a smoothly functioning cash infrastructure. In addition, the report explores ways to improve the efficiency of the cash chain and addresses the costs and funding of the infrastructure. Lastly, it focuses on various possible policy measures to guide any infrastructure developments in the right direction, if so desired, from no intervention at all to regulation, including various options to fund these measures.

DNB's opinion

McKinsey's analysis provides valuable insights. For example, the report highlights the importance of having fall-back options for electronic payments and recommends

that digital means of payment are developed for use at the POS. This may allow the size of the cash infrastructure to adapt to the actual use of cash at any time. Research into the cost of cash also provides added value, as these costs turn out to be largely variable with usage rather than with the — shrinking — size of the infrastructure. The report also sheds light on the cost of cash for retailers. Retailers bear the highest costs, although these are ultimately passed on to consumers via product prices. According to the report, 96 per cent of points of sale accept cash payments, but one-third of them also encourage customers to pay electronically. Based on these findings, McKinsey raises the issue of the funding of the (cash) payment system and payment services.

DNB endorses McKinsey's recommendation to focus on developing digital means of payment for use as alternative fall-back options to electronic payments at the POS. This may help to improve the robustness and efficiency of this component of the payment system. The Dutch Payments Association and the banks have explored such alternatives and assessed them against different requirements, including robustness. Several conditions must be met before cash as a fall-back instrument can be replaced by digital means of payment, including conditions of scope and inclusiveness. This means that such digital payment instruments must be widely available and accessible to people in vulnerable groups.

In the current market circumstances, DNB recognises the pressure on profitability among banks in the Netherlands, where prices for consumer payment services have traditionally been lower than in other European countries.

DNB therefore sees the McKinsey report as an indication that banks — even if they are profitable — pass on the cost of payment services to customers to a larger extent. Of course, it is up to individual banks to determine their prices, but they should take care

not to place the burden specifically on users of cash — a group dominated by more vulnerable users. DNB also notes that banks must devote efforts and resources to detecting and addressing money laundering and fraud — involving both cash and digital payment instruments. These efforts must not be used as an excuse to hamper the legitimate use of cash, reduce the accessibility of the cash infrastructure or reduce the inclusiveness of the payment system.

DNB notes that if there are adequate fall-back options to cover for electronic payments while cash remains essential given the societal functions it fulfils, cash and the cash infrastructure will increasingly become a public good. DNB also recognises the views on the use of cash at points of sale. Some retailers will continue to accept cash payments for as long as their customers continue use it. Others will be less inclined to do so in view of the costs involved or for security reasons. Security deserves continued attention from all parties in the cash chain.

CONCLUSION

DNB welcomed the initiative to establish GSN. In July 2010 the shareholding banks and DNB signed the cash covenant, in which they expressed their intention to work together in cash-processing and cash logistics. DNB regards the accessibility and availability of cash as important. It therefore supports cooperation, behind the scenes of the value chain, that improves the affordability for banks and thus contributes to achieving these objectives.

Governance is a challenging issue for GSN and Geldmaat because the shareholding banks are also Geldmaat customers. That responsibility means they have to represent the interests of their retail and business customers; these interests can obviously vary from one bank to another as each bank has its own market strategy. In other words, the

banks and Geldmaat also have different roles to play in the various consultation forums in which they are represented. Furthermore, they must respect and adhere to these roles. This requires them to have trust in each other and trust in the joint objectives that have been set. This too can be challenging, given that the new Geldmaat organisation operates differently from the individual banks' cash-processing organisations. The banks must have the courage to let go of the reins, while Geldmaat, in turn, must be able to show that it has the qualities needed to act in accordance with its mandate and show it is deserving of the trust that has been placed in it. This means investing time in the consultations and discussions that are essential for successfully rolling out a business and brand such as Geldmaat.

REFERENCES

- (1) NFPS (2021) 'Rapportage 2020 [in Dutch]', available at: https://www.dnb.nl/media/wvrba/rb/mob_jaarverslag_2020.pdf (accessed 29th December, 2021)
- (2) McKinsey & Company (2021) 'De toekomst van de chartale infrastructuur in Nederland', available at: <https://www.dnb.nl/media/emvfbecy/rapport-mckinsey-de-toekomst-van-de-chartale-infrastructuur-in-nederland.pdf> (accessed 30th December, 2021); for an English-language summary, see <https://www.dnb.nl/media/ks0d0d30/report-mckinsey-the-future-of-the-cash-infrastructure-in-the-netherlands-executive-summary-only.pdf> (accessed 30th December, 2021).
- (3) NFPS, ref. 1 above.
- (4) European Commission (2019) 'Directive (EU) 2019/882 of the European Parliament and of the Council of 17 April 2019 on the Accessibility Requirements for Products and Services', available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0882&qid=1633937000176&from=EN> (accessed 29th December, 2021).
- (5) Court of Justice of the European Union (2019) 'Judgment of the Court (Third Chamber) 3 October 2019: Reference for a preliminary ruling — Taxation — Value added tax (VAT) — Sixth Council Directive 77/388/EEC — Exemptions — Article 13B(d)(3) — Transactions concerning payments — Services supplied by a company to a bank relating to the operation of cash points', available at: <https://curia.europa.eu/juris/document/document.jsf?text=&docid=218619&pageIndex=0&doclang=EN> (accessed 30th December, 2021).
- (6) DNB (2021) 'The future of the cash infrastructure in the Netherlands', letter to the House of Representatives, available at: [brief-dnb-aan-minister-v-financiën-engels-v2.pdf](https://www.dnb.nl/media/brief-dnb-aan-minister-v-financiën-engels-v2.pdf) (accessed 29th December, 2021).
- (7) NFPS (2015) 'Visie op de rol van contant geld als toonbankbetaalmiddel', available at: <https://www.dnb.nl/media/ziudwwee/mob-taskforce-toekomstvisie-contant-geld-17-nov-2015.pdf> (accessed 29th December, 2021).