



CURRENCY NEWS™

THE CONFIDENTIAL NEWSLETTER FOR CURRENCY | VOLUME 23 – NO 8 / AUGUST 2025

Inside this edition

Swiss Citizens Have Their Say on New Banknotes	1
The Need for Revolution, Not Evolution	2
News in Brief	3
Changes Planned for Ukraine's Currency	4
Central Banks and Cash Round-Up	5
More Than Money: Guatemala's Q1 Quetzal Symbolises Economic Confidence	6
Global Developments in Coins v Banknotes	8
A (Moving) Picture Tells a Thousand Words	10
Sequential Banknotes: from Manual to Automated Production	11
Authentix Powers Crypto Banknote with Next Generation Security	11
What is the Value of Cash?	12
Note and Coin News	13
Bolivia's Bicentennial Commemorative Banknote	13
(House) Banknotes of the Month	14
New House Note Supplement	15
ACMA at Asia Cash Cycle Seminar in Bali	16

Swiss Citizens Have Their Say on New Banknotes

In last month's Currency News™ we mused on whether inviting the public to provide input into new currency designs was a good or a bad thing. It has undoubted benefits, but also carries risks.



Those risks notwithstanding, the latest country to involve its citizens in banknote designs is Switzerland, where the Swiss National Bank has opened up the proposed themes for the next, tenth, banknote series to the public.

SNB first announced that work had begun on the country's new banknote series last year (see CN October 2024). It had already decided on the theme – 'Switzerland and its Altitudes' – which will pay homage to the country's unique mountainous topography, from the Jura and the Central Plateau to the Alps, and depict Switzerland from its deepest valleys to its highest peaks.

The first step in the process of developing the new series was to open a competition to any designer working in Switzerland. Over 300 applications were submitted. Based on the quality of their portfolio to date, the creativity of their designs, and their professional qualifications, 12 teams and individuals were

selected to participate in the next stage. Their work is now being opened to the public for its say.

The opinion polling company Demo SCOPE is conducting the public survey on behalf of SNB. It was opened on 13 August and closes on 7 September, with all interested parties invited to evaluate the designs via the SNB website.

The six teams with the best-rated designs will be admitted to the second phase of the competition, during which they will draw up their proposals for a possible commission to realise the banknote designs.

It doesn't seem so long ago that Switzerland introduced the 9th series, which was, and remains, one of the most secure banknote families in the world. But that was back in 2015. The SNB will announce the winning team for the design of the new series at the beginning of 2026. The new banknotes will enter circulation at the beginning of the 2030s at the earliest.



The Need for Revolution, Not Evolution

■ By John Winchcombe, Editor, Cash & Payment News

In the northern hemisphere, August has become the ‘go away’ month. Everything slows down and you can’t be sure that you’ll get a response. In those circumstances, we are risking affront by suggesting the need for a radical and fundamental review of cash and the cash cycle. Replies welcome!

What our industry and the central banks are often failing to do is to step back and think laterally. How can we marry up digital and analogue, what can’t digital replace, are there new business models etc?

At G+D’s Currency Technology Symposium in July, the story was told of how it invented the eSIM card with which we are now so familiar. Producing SIM cards was not profitable and G+D rethought what they did and how it could be done. Across every industry, every process, a combination of factors, particularly the advent of artificial intelligence (AI), means that change is upon us. In our own industry, cash, we are seeing major changes.

The story goes that an Anglo-Saxon King, Canute, was constantly told by his courtiers that he was exceptional with amazing powers. When he ordered the tide not to come in, he found his courtiers were wrong and he got his feet wet. As we strive to sustain cash by pointing out its undoubted strengths, making the cash cycle ever more efficient and seeking legislation to mandate its acceptance, are we missing a trick blinded by our cash beliefs?

A recent blog pointed out that bank technology failures are becoming more common¹. For example, in the UK, according to data from the House of Commons Treasury Select Committee, Barclays Bank suffered 33 system failures between January 2023 and February 2025. Over the same period, HSBC and Santander were both hit by 32 outages.

A recent survey by 10x Banking found that more than half of banks’ decision makers believe their data silos and production bottlenecks are key barriers to embracing new technologies like artificial intelligence².

43% of US banks core systems are based on COBOL mainframe systems, with their 60-year old programming language³. This can only be because of a fear of risk and of failure. Sandboxes are fine, but changing core systems is hard. A balance is needed between change that equals risk, and change that equals innovation and differentiation; this is the constant battle within all institutions, but particularly central banks and the cash industry.

What have others done?

Faced with a technology-driven change, how have other industries responded? What can we learn from their experience?

■ **Terrestrial TV** – subscription TV is still just TV, but the likes of Netflix reinvented the game with a novel subscription mode and powered by massive investment in programming and laser like focus on entertainment. The result is that traditional TV is leaking audiences, and the advertising dollars are leaving the room to chase after the people.

■ **News** – traditional news channels are being replaced not so much by online newspapers but by TikTok, YouTube, podcasts and digital versions of magazines with their bite-size morning briefings. These new channels have thought about how people live and adapted existing technology and business models. A different application of technology creating new markets. Again, paid for by advertising and subscriptions.

■ **Postal services and post offices** – modern lifestyles don’t include much letter writing but do include e-commerce. The traditional post systems are struggling to concentrate on what people actually use and to scale for the new reality – parcels, banking, cash, the delivery of physical advertising and official documents. Those who focus on community services survive, and those who can sort out their costs, survive. Why can Amazon, DHL, et al thrive but the postal services often struggle?

■ **City bikes** – while the introduction of city bikes to rent by the minute has not always gone smoothly, they are an interesting example of matching consumer needs with technology to create a new market.

■ **Shops, cinemas, book shops** – those that transition to being a ‘destination’ for fun, community and special moments survive and even thrive. People still value community, but on their terms. Shops that can get the online/physical balance right thrive. One problem for retailers is when governments don’t realise that these venues just aren’t as profitable as

they used to be, and still tax them as they used to.

■ **Conferences** – video-calling took off during the pandemic, and has remained core to post-pandemic communication. Webinars, however, just about survived while online conferences have (mercifully) gone. While there is a niche for them, trust and trade are actually about people and human interaction. But conference organisers are having to be more focused on what they do and better at how they communicate with the relevant audiences. They also now link to publications, social media, email etc. very differently from previous times.

There are many other examples, but across them all organisations have created new business models and/or used new technologies to drive convenience and lower costs, focusing on what people need, being about people and the things people like.

While there are those who prefer books, bikes, cameras with films, records/tapes, arguing that analogue is richer than digital, those are increasingly niche products. Digital is not always best – for example, until ‘range anxiety’ is fixed for lorries and cars, it looks like the internal combustion engine is not being defeated by electric vehicles.

But can we do for cash what Netflix or podcasts have done for TV and news?

Reinventing a classic

This article is arguing for radical transformation across all aspects of cash – from production to consumer usage to the cash cycle, across central banks, suppliers and cash cycle stakeholders – in how we create, deliver, and capture value.

A recent PwC article considered this whole topic⁴. 52% of the companies that were listed on the Fortune 500 in 2003 have since gone bankrupt, been acquired, or otherwise ceased to exist. 45% of respondents in PwC’s most recent Global CEO Survey said their company won’t be viable in ten years if it sticks to its current path.

PwC argues that we should not see this in terms of ‘doom and gloom’ because every problem, every risk, contains the seed of significant rewards if you can identify and seize the opportunities they present.

This isn’t about the usual responses to disruption such as slashing costs or transforming operating models, even if doing these will almost certainly be necessary. To change we will have to be comfortable with challenging long-held

Continued on page 4 >

1 Bank IT outages ... let’s talk about the bank systems Jenga. The risk of change versus the risk of not changing – Chris Skinner’s blog

2 ‘Core Technology Holding Us Back’ say 55% of banks – new 10x Banking research reveals

3 Why COBOL Still Dominates Banking. Will the last COBOL guy turn the banks’ lights out?

4 Make business model reinvention real | PwC

News in Brief

■ MoU Between UAE and South Sudan

The Central Bank of the UAE (CBUAE) and Bank of South Sudan have signed a Memorandum of Understanding (MoU) to establish a comprehensive cooperation framework in the areas of security printing, developing innovative solutions for switching and processing payment card transactions in South Sudan, and exchanging knowledge, experiences, and technical training.

Under the MoU, the CBUAE will provide support for South Sudan's banknote requirements through its Abu Dhabi-based banknote printing subsidiary Oumolat. Al Etihad Payments, a subsidiary of the Central Bank of the UAE, will also support Bank of South Sudan in developing a payment card system in South Sudan in two phases.

The MoU also includes the exchange of information and expertise, and the provision of technical support and training for Bank of South Sudan's employees in banking supervision and monetary operations, through programs provided by the Emirates Institute of Finance, another subsidiary of the CBUAE.

■ Iran Plans Redenomination - Again

The Iranian government has approved a bill to redenominate the Iranian rial. The measure is intended to 'ease the psychological pressure' on the population given the significant decline in the purchasing power of the currency due to high inflation. The need to reduce the volume of new banknote produced was also a factor in the decision.

The issue of low value of the rial is an ongoing one that has seen several proposals over the past four decades to redenominate and/or rename the currency. In 2008, an official at the Central Bank of Iran (CBI) said that the rial should have four zeroes removed and be renamed the toman. That same year, it began issuing bearer cheques in place of banknotes. In 2010, the then President, Mahmoud Ahmadinejad, announced the removal of three zeroes. A year later, this was back up to four, with the CBI reported to be working on a plan to emulate the 2005 revaluation of the Turkish lira.

In 2016, the government announced its intention (again) to replace the rial with the toman (which is already used in common

parlance and represents 10 rials). In 2019, a bill to this effect was proposed, and approved the following year by the parliament.

Since then, the CBI has issued a number of new so-called bearer cheques (which look and function like banknotes) in denominations ranging from 10,000 to 2 million rials. In all cases, the full value is spelt out on the notes, but so is the abbreviated version, ie. minus four zeroes, indicating that the redenomination is already underway, and that all this latest announcement does is drop the idea of naming the currency the toman.

■ Uganda Struggles to Replace Note with Coin

The Bank of Uganda (BOU) is reported to be struggling in its attempt to phase out the 1,000 shilling banknote, due to unexpected high costs and public resistance to its coin replacement.

The BOU issued a 1,000 bimetallic shilling coin in 2012 to mark the country's 50th anniversary of independence, and it has co-existed with the note of the same value, albeit it is rarely seen in circulation.

In 2023, the BOU commissioned the International Monetary Fund (IMF) in 2023 to conduct a cost-benefit analysis on replacing low-denomination notes with coins, and that year announced that the note would be phased out in favour of its coin equivalent.

However, the programme has been hampered by delays in the procurement process for new coinage, impeded by soaring prices that have seen the cost of coin issue leap by 53%, from Shs 9.3 billion in 2022/23 to Shs 13.3 billion in 2023/24. Part of the problem is understood to be minting companies scaling back operations, with a knock-on effect on prices.

Public acceptance has also been a notable hurdle. The 1,000 shilling coin has largely failed to gain widespread use and mostly remains out of circulation. The note, meanwhile, is the most popular of all denominations, accounting for 25% of all banknotes in circulation by volume.

■ Syria to Replace Currency

Speculation about changes to Syria's currency following the ousting of President Bashar al-Assad, have, it would appear, been borne out, with plans announced to redesign and revalue the country's banknotes. The move is intended to simplify transactions and restore confidence in the severely devalued Syrian pound by removing two zeroes from the currency.

Since 2011, the Syrian pound has lost over 99% of its value, causing widespread difficulties in transactions and money transfers. The Governor of the Central Bank of Syria, Abdelkader Husrieh, described the new currency as a 'necessity' to strengthen public trust and facilitate foreign trade.

The current series was introduced in 2009, with high denominations introduced more recently to contend with rampant inflation. It is currently denominated in notes of 50, 100, 200, 500, 1,000, 2,000 and 5,000 pounds. It is understood that the incumbent printer, Russia's Goznak, will print the new series and that they will go into circulation on 8 December, the first anniversary of the removal of Assad.

■ Zimbabwe's Return to Mono-Currency on Course

The Reserve Bank of Zimbabwe (RBZ) has started the production of redesigned ZiG banknotes, which will soon be issued as part of the central bank's de-dollarisation roadmap targeting a mono-currency regime within the next five years.

The new notes will feature enhanced security elements to curb counterfeiting, while improvements in paper quality and durability are expected to make them more resistant to wear and tear.

The gold-backed ZiG was introduced to much fanfare in April 2024 to replace the Zimbabwe dollar, with authorities insisting that a solid forex and gold reserves were key to restoring public confidence in the domestic currency.

But since then only two notes in the series have been issued – the ZiG 10 and ZiG 20. Many citizens have complained of their quality, in particular that they fade too quickly. Banks and retailers have also expressed concern about maintaining heavily worn notes, calling for improved quality.

The redesign and upgrade, which RBZ says is in line with international best practice, will cover the full range of notes announced last year, which also include ZiG 50, 100, and 200 notes. In addition, the series includes three coins – ZiG 1, 2, and 5.

The move comes at a time when use of the local currency is reported to be rising, with the ZiG now accounting for over 35% of all transactions, up from 15% last year. Price stability has also held, with the cost of basic goods largely unchanged since October. Authorities say this marked stability is laying the foundation for the rollout of a sustainable mono-currency regime.

Changes Planned for Ukraine's Currency

According to local reports, the National Bank of Ukraine (NBU) is making changes to the denominations of hryvnia (UAH) banknotes, adapting to the changing financial habits of Ukrainians. Demand for UAH 200 banknotes has decreased by nearly a quarter in the last year, but is up for the highest denomination, the UAH 1,000. Part of the reason is the ongoing military situation, which is resulting in people using, and storing, the high value denominations. Demand for the smallest denominations, such as UAH 10 and 5 banknotes, is also declining.

The NBU is also planning to stop minting the lowest denomination 10 kopeck coins and will start withdrawing these from circulation from this October. Around 4.1 billion of the 5.5 billion coins in circulation are 10 kopecks. They have lost any purchasing power, said the NBU, and their withdrawal will save on production, transport, storage and processing costs.

Rounding rules will be applied. The coins will remain legal tender and can still be used in transactions, but will not be handed out as change. Their withdrawal will affect cash transactions only.

As of July, cash in circulation across Ukraine reached UAH 859.9 billion, 4.6% more than at the start of the year. Of this, 2.6 billion banknotes worth UAH 851.2 billion were in circulation, in addition to 15 billion coins (excluding collectibles) worth UAH 8.5 billion. On average, each Ukrainian has 63 banknotes and 189 coins.

The NBU already went through a comprehensive currency restructuring in 2018. It involved a reduction in the number of notes from nine to six, with the four lowest denominations (the UAH 1, 2, 5, and 10) converted to coins, and a new high denomination UAH 1,000 introduced. The three lowest coin denomination (1, 5, and 10 kopecks) and the 25 kopeck were discontinued. There are now six denominations of coins as well.

Separately, the NBU has reported a significant increase in the number of counterfeit banknotes, particularly the UAH 200 (18%) and UAH 500 (78%).

The counterfeit ratio now stands at 5.1 ppm, which is higher than 2022-23 (when the figures were at a record low due to the peculiarities of martial law) but less than the 7.1ppm of 2021.

... The Need for Revolution, Not Evolution

assumptions about how industry stakeholders make money, especially since these assumptions are what brought success in the first place for many decades.

There is also evidence that the currency industry is doing one of PwC's key recommendations, collaborating to compete in order to gain benefits – including access to new customers and markets, privileged insights such as data on customers' needs, and complementary skills and capabilities. It argues that ecosystems will be the primary mode of competition.

The challenge of inertia

Delivering day-to-day dependability again and again means you have to be organised. In 'normal' times, this delivers stability and continuity. When it's time for a change, moving away from your organised model becomes a problem. PwC recommends, therefore, that housing a new business model separate from the rest of the company is one way to overcome the resistance to change.

PwC lists the following sources of inertia from today's steady state which are frequently experienced:

■ Confidence in the status quo.

Your success creates a tendency for people to become attached to the current approaches. The environment changes; you can't.

■ **Costs of change.** Change has costs, including hidden ones like product cannibalisation.

■ **Power plays.** Your leaders are reluctant to jeopardise their positions or dismantle their departments when changes are proposed. Infighting impedes progress.

■ **Skills gaps.** The large gap between the skills your company has, and needs, slows or deters new endeavours.

When making a change, reallocating capital and resources is always hard. In PwC's CEO Survey, nearly two-thirds of respondents reported reallocating 20% or less of resources (including people) from year to year, and almost 30% of CEOs cited resource reallocation of 10% or less. That is despite the fact that higher levels of annual reallocation in the survey were associated with both greater levels of reinvention and higher profit margins.

The graphic below shows six examples of winning business model designs that companies use to reinvent themselves. At first glance not all are applicable. However, it is an interesting exercise to challenge yourself about whether they could be useful for cash and the cash cycle. Why not 'banknotes as a service' (lease them don't buy them)? Connected physical products is an obvious opportunity which links closely to ecosystems. Again, channel disintermediation is already happening to a small extent when banknotes are delivered in the post etc.

Final word

It would be easy to read this as being about the private sector, but I would argue it applies just as much to central banks and treasury departments.

Why not step back and see if you can find people who can think radically about fundamental change? The need is visible. The prize is enormous both for society and for those in the cash business.

Anything as a service (XaaS) What is it? Transforming traditional products to an on-demand, subscription, or consumption-based service Example: Storage as a service	Connected physical products What is it? Physical products equipped with sensors that exchange data with other smart products or platforms Example: Diabetes care through wearables	Digital products What is it? Software-enabled assets that users can interact and transact with Example: Digital banks, ebooks
Ecosystems What is it? Platform for interactions and transactions between multiple stakeholders that collectively creates and shares value Example: Cloud computing platform	Channel disintermediation What is it? Going direct to customers vs. going through third parties Example: Embedding insurance in automobile purchase	Value chain shifts What is it? Offering wide-ranging products and services for an all-encompassing customer journey vs. a specific segment of the value chain Example: Insurance expanding to caregiver space

Central Banks and Cash Round-Up

The focus for this month's summary of news from central bank annual reports and other sources are Mozambique, South Africa, and the UK.

■ Banco de Moçambique (BoM)

The Banco de Moçambique (BoM) spent 3.512 billion meticaïs (€46.9 million) on producing new banknotes and coins in 2024, following the launch of a new series. This marked an increase from 3.292 billion meticaïs (€44 million) in 2023, according to media sources.

BoM ended 2024 with nearly 85.337 billion meticaïs in circulation, equivalent to €1.140 billion, compared to 80.456 billion meticaïs (c. €1.075 billion) in December 2023. The central bank also reported that it destroyed 8.762 billion meticaïs (€117.1 million) worth of notes and coins in the same period.

■ South African Reserve Bank (SARB)

SARB operates through four subsidiaries: the South African Bank Note Company (SABN) and the South African Mint (together with its subsidiary Prestige Bullion), responsible for producing currency; the Corporation for Deposit Insurance, which manages the country's Deposit Insurance Fund; and the Corporation for Public Deposits, which provides investment services.

The counterfeiting ratio stood at 3.16ppp, well below SARB's threshold of 12 ppm and an improvement from 4.03 ppm in 2023/24 and 5.18 ppm in 2020/21. SARB's currency-producing subsidiaries also met their cost-efficiency targets for banknote and coin production.

Banknote buffer levels stayed above the nine-month target, ensuring continuity of supply, while coin buffers exceeded the six-month target. This was driven in part by the inventory required for the third-decimal coin withdrawal strategy and reduced demand for certain high-denomination coins. SARB achieved its strategic goal of delivering 100% on-time, in-full availability of currency to the cash industry for the second consecutive year.

On quality, the yield of fit banknotes in circulation reached 75%.

Banknote production: SABN produced 802 million banknotes for the SARB and reported a significant turnaround in profitability, with earnings before interest, taxes, depreciation and amortisation (EBITDA) of R 52 million, compared with a loss of R 122 million in the previous year. Net profit before tax improved accordingly, reaching R 55 million, against a loss of R119 million in 2023/24.

Beyond its financial results, the SABN maintained its Level 1 accreditation from the Banknote Ethics Initiative Accreditation Council, demonstrating adherence to a strict Code of Ethical Business Practice designed to combat corruption within the industry.

Looking ahead, the SABN's priority is to accelerate operational excellence to improve banknote quality and optimise the cost of currency production. A key focus will be the implementation of the Asset Masterplan, which will ensure that future banknote demand is met efficiently and reliably.

Coin production: during 2024/25, the SA Mint focused on delivering the SARB's circulation coin order and expanding its collectables product range. Despite fluctuating commodity prices and global economic volatility, the Mint reported revenue of R 3.291 billion (2023/24: R3.225 billion). Prestige Bullion contributed R 1.819 billion, slightly above the previous year's R 1.815 billion, reflecting a slowdown in bullion demand.

Key highlights of the year included:

- Completing the SARB order of 887 million coins a month ahead of schedule.
- Growing collectables coin revenue to R515 million (2023/24: R439 million).
- Achieving record revenue of R78 million at Coin World, the Mint's retail outlet.
- Launching a new product portfolio strategy for Collectables, including the Big 5 Series III elephant and lion coins, depicting the animals in motion.
- Producing commemorative coins for the 50th anniversary of the Central Bank of Eswatini.
- Successfully implementing a Risk Management and Compliance programme, meeting Financial Intelligence Centre (FIC) requirements.
- Achieving two million hours without a lost-time injury (LTI), underlining a strong commitment to safety.
- Receiving a 75% employee engagement score in the Deloitte Culture Survey.

Building for the digital future: the Annual Report highlights SARB's determination to modernise South Africa's payments infrastructure, drawing inspiration from emerging-market peers such as Brazil and India and their roll-outs of fast, affordable and accessible retail payment solutions.

The flagship Payments Ecosystem Modernisation (PEM) project lies at the heart of this transformation. Its central feature is

the creation of a National Payments Utility (NPU) to provide foundational infrastructure for digital retail payments. To support this, the SARB is negotiating to acquire a 50% stake in BankservAfrica, the automated clearing house based in Johannesburg.

The PEM strategy also includes repositioning payment schemes under SARB leadership and advancing regulatory reforms to encourage innovation. For example, activities such as holding balances in e-wallets will no longer require a banking licence, thereby lowering barriers to entry for fintechs and challenger firms.

Complementing these efforts, the SARB plans to develop a Digital Financial Identity (DFID) system to streamline user verification, enhance security and combat fraud. This initiative will also align with broader national projects, including the National Digital Identity framework.

■ Bank of England (BOE)

Banknotes in circulation: the BOE recently published its latest figures on notes in circulation, which are measured from February to February each year. There was a 2.7% increase in volume to just under 4.73 billion banknotes, and a 4.2% increase in value to £85.87 billion, at the end of February 2025.

The majority of notes in circulation are the £20 (2.75 billion), followed by the £10 note (1.26 billion), the £5 (391 million), and the £50 (325 million), which are roughly the same percentages as the previous year.

Nearly 96 million unfit banknotes were returned to the central bank and required disposal – just over 30% of these were old series paper banknotes. The value of notes destroyed was £917 million (versus £2.1 billion). The value of new notes issued was just under £5 billion (versus £3.35 billion the previous year).

Nearly £14 million worth of damaged banknotes were exchanged – the majority were contaminated (two thirds); the remainder had been chewed, washed, torn, or damaged by fire or floods.

Counterfeiting: in 2024, 91,000 counterfeits were withdrawn, or 1 in 52,600, representing a ratio of 19 ppm. The number was down 27% over the previous year. Of these, the vast majority (80,000) were the £20. In addition, 63,000 counterfeits were seized before entering circulation.

The BOE says that counterfeiting has substantially reduced since 2019 as a result of the introduction of more robust polymer banknotes, and the subsequent withdrawal of the older paper designs, as well as successful police action on the sources and distribution of counterfeits.

Continued on page 7 >

More Than Money: Guatemala's Q1 Quetzal Symbolises Economic Confidence

At the recent HSP™ Latin America conference in Rio, the winner of the Regional Commemorative Banknote of the Year award was Banco de Guatemala (Banguat) for the Q1 quetzal. The Governor, Alvaro González Ricci, who received the award, also spoke about the banknote in his presentation at the conference.

What stood out in this presentation was that – beyond the note's visual and security features – its main purpose was to communicate to Guatemalans the strength of the central bank and the national economy, both serving as a beacon of stability in the region.



Currency News™ caught up with Alvaro González Ricci, following his receipt of the award to find out more.

Q: Firstly, could you tell us a little about your background and how you came to join Banguat?

A: I began my career in the banking sector, where I gained twenty years of experience. In 2007, a friend persuaded me to enter politics, and together we founded the political party CREO. I was also elected as a member of the Guatemalan Congress from 2012 to 2016, representing Guatemala City. After that I was an advisor to the Presidency in Congress in 2017. I then became a consultant for the IDB (International Development Bank) and later, also a consultant for the World Bank in Guatemala.

After that, the former President of Guatemala, Alejandro Giammattei (from 2020-2024), with whom I was acquainted when we were both working at the Banco del Café in the 1990s, invited me to join his movement. I considered this invitation and I agreed to be part of his election team working on his campaign. When Mr Giammattei was elected president, I was

appointed Minister of Finance, a position I held for almost three years, from 2020 to 30 September 2022.

Following that position, I was appointed by the President to my current role as President of Banco de Guatemala. I have been in this position from 1 October 2022 to date and will continue to do so until the term ends on 30 September 2026.

Q: What is the current cash environment in Guatemala?

A: Cash is still king in Guatemala. In Europe, electronic payments are dominant, but in Latin America cash is still the most widely used method of payment. Therefore, cash in circulation continues to grow.

However, there is full awareness that we are moving forward to the digital world. In Guatemala we are currently trying to pass a law that regulates electronic means of payment, as we are one of the few countries that do not have such a law regarding fintech companies and wallets.

There is also an initiative in Congress, which Banco de Guatemala has been invited to participate in, to seek a regulation on the issue of cryptocurrencies and crypto-assets that would be legal tender.

Even though it is true that the country is cash-driven, we are being very active in going towards where the market is going, and that clearly is to more digital markets.

Q: Is Banguat still focused on ensuring that people have access to cash?

A: We are committed to ensuring that both cash and electronic payment systems works effectively. In Guatemala, and I would say in most countries, there is a fear of leaving cash.

Central banks have to be very careful with CBDCs – which are yet to be adopted – because people fear that by having all their money fully registered digitally, the central banks could intervene and potentially devalue it.

Another fear of full electronic currency is that the government or central banks can regulate where and how you spend your money. There is a lot of informal economy in Guatemala, like many others in South and Central America. This informality means that many people who currently don't pay income tax, for example, fear

that when they go digital, they can be fully traced. They are afraid that they will be forced to become part of the formal sector, with the accompanying traceability – which many low-income individuals fear will involve expenses for them that will not be met, given their current wages.

Q: The quetzal has remained very stable against the US dollar in recent years, in addition to Guatemala's sovereign credit rating being recently upgraded. Could you expand a little on this, and what Banguat has been doing right?

A: The quetzal is among the most stable currencies worldwide. Kristalina Georgieva, Managing Director of the IMF, has even described Guatemala as a 'bright spot in the region', recognising our macroeconomic stability over the past two decades. During this period, our exchange rate has remained consistently around Q7.70 quetzales per dollar.

GDP has grown by an average of 3.5% in recent years, more than many other countries in the region. Our target GDP growth is 4% but the US administration's tariff policy will affect this, particularly as they are our largest trading partner. So this target could be closer to 3.8% as a result. Although we are the first country in the region to reach stability targets, which builds confidence in our economy.

Standard & Poor's has raised Guatemala's credit rating to BB+, placing the country just one notch below investment grade. As Minister of Finance, I was always concerned with our credit rating and I decided to build up a good communication strategy where we worked closely with banks, exporters, our Tax Authority (SAT), and so on, and visited all the rating agencies to move forward.

Today, as President of Banco de Guatemala, I cannot be happier that a goal I had as Minister of Finance has rendered positive results with the new BB+ rating. And I hope that our sovereign debt rating will be improved further still. At least, that is one of my hopes for the remainder of my term.

Q: Congratulations on winning the Best Commemorative Banknote. Can you describe the winning banknote and the background to its release?

A: The quetzal currency was launched in 1924, over 100 years ago, and the commemorative banknote reflects the stability of the currency. The last Q1 quetzal banknote was printed in 2012, but the denomination was chosen for the commemorative note due to its historical significance.

The quetzal bird has a red-breasted (which is the national bird of Guatemala and after which the currency is named) that represents the death of a Mayan warrior,

Continued on page 7 >

Tecun Umán, who was killed during the Spanish conquest. The quetzal flew and rested on the warrior's chest and the quetzal's breast turned red.



Giesecke+Devrient printed the banknote, which features two lines of intaglio print for the visually impaired, perfect registration on the flag, and a varifeye® ColourChange security patch. The creation of this banknote was a team effort between Banguat and Giesecke+Devrient, who worked closely together.

Q: *How was the banknote received by the public?*

A: By law, the Banguat must be able to exchange any amount of money in any of the different denominations upon request. In this case, we had to open 10 additional bank tellers in our building due to the popularity of the Q1 quetzal banknote. It was like waiting in line at Disneyland! This banknote may represent all of the cultural highlights of the country, but it is also legal tender. The original note is difficult to find in circulation, so numismatic collectors are also interested in collecting it.

When the banknote was launched on 10 September 2024, the central message, in addition to the banknote's features, was to highlight Banco de Guatemala as the sole issuer of the national currency and the guardian of monetary stability in the country. We were able to take advantage of the public and media interest in the Q1 quetzal note to really promote the role and cultural/societal initiatives of Banco de Guatemala. We have an app, 'Billetes GT' (Banknotes of Guatemala), that can be used to learn about all the banknotes of Guatemala and the current series characteristics, for example.

We estimate that the value of the publicity that we received is at least as much as the cost of producing the 25 million banknotes. The banknote, its design, and security features,

has served to position the Bank more positively and allowed it to have even more communication benefits in the subsequent six months.

Q: *The current banknotes series dates back to c. 2008, whilst the fundamental designs date back to the 1980s. Are there plans for a change any time soon?*

A: We are analysing designs for a new family, but any changes will have to go through Congress, which is likely to take some time. I do like banknotes that use nature (flora and fauna) in their designs rather than politicians, but I am not sure if this will happen.

Both Congress and the central bank need to be aligned if creating a new series is an objective for both the administration and the central bank.

Q: *HSP LatAm came to Guatemala in 2017 and is planning to return in 2026. What message do you have to the industry, and why should they visit your country?*

A: We would love to show our country to those who decide to visit. We want to promote Guatemala to everyone, so they can experience beautiful places like Antigua Guatemala, Lake Atitlán, the Petén ruins, and even enjoy experiences like volcanic tourism, which is now very popular and unique in the country.

For the industry, it is essential that central banks use their banknotes as a communication tool with the population, and the Q1 quetzal banknote has been a great success for us in this regard.



... Cash Round-Up

East Caribbean Central Bank (ECCB)

The Eastern Caribbean Central Bank (ECCB) is the central bank for the Eastern Caribbean Currency Union (ECCU), which comprises the seven Caribbean island nations of Anguilla, Antigua and Barbuda, Dominica, Grenada, Montserrat, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines.

Currency in circulation: as of 31 March 2025, the total value of currency in circulation reached EC\$1,700.41 million, reflecting an annual growth of EC\$127.20 million (8.09%). The currency composition remained heavily weighted towards banknotes, which comprised 91.64% (EC\$1.55 billion), while coins accounted for 8.35% (EC\$141.89 million), and digital currency (DXCD) 0.01% (EC\$0.21 million).

This trend underscored a continued reliance on physical cash, particularly banknotes, and the need for improved handling of coins. The ECCB introduced a new Banknote Policy that establishes clear standards for commercial banks to manage fit, unfit, and mutilated notes.

Currency management priorities for 2025/26

- Redesigning EC banknotes and coins to reflect the transition away from the British monarch's image.
- Developing recycling and disposal strategies for shredded polymer notes.
- Utilising scientific forecasting and data analytics to improve demand projections.
- Expanding the 'Know Your Money' training program for cash handlers.
- Implementing a coin redemption strategy to enhance coin recirculation in the region.
- To protect the integrity of the EC currency, a 'Forensic Expert Witness Training Course' was conducted for regional law enforcement officers.

Payments: the ECCB places payments modernisation at the forefront of its efforts to improve financial inclusion and operational efficiency. A significant milestone was the finalisation of the oversight framework for Financial Market Infrastructures (FMIs) and Payment Service Providers (PSPs). This framework includes comprehensive manuals for monitoring, risk assessment, and regulatory oversight.

It also concluded the DCash pilot and gathered feedback to help it recalibrate its digital currency roadmap. Concurrently, the ECCB accelerated efforts on a central data warehouse and a broader Data and AI Strategy. A dedicated committee now oversees data governance, model guardrails, and procurement for the full system rollout.

Elsewhere, the ECCB collaborated with the World Bank and regional governments to launch a Resilient Renewable Energy Investment Facility, supporting multimillion-dollar green energy projects.

Other highlights included the issue of a \$50 commemorate note celebrating Grenada's 50th independence anniversary, and the formation of the Corporate Governance Unit (CGU) to drive strategic alignment and internal reforms.

Global Developments in Coins v Banknotes

■ By Antti Heinonen, External Advisor, Bank of Finland, and former Director, Banknotes of the ECB

We have recently read that the US Treasury has confirmed that the production of US one cent coins will stop once the stocks of blanks have been used up. Respectively, on the other side of the Atlantic, the German National Cash Forum advocates rounding up or down to the nearest 5 euro cent for cash payments in Germany. It even proposes that the rounding rule (applied from the beginning in Finland) should be applied across Europe as uniformly as possible. Cash means both notes and coins. Therefore, the monitoring of both is important to the future of cash.

Another stimulus to this article are the regular updates on the global demand for banknotes. The data is sometimes limited to the total value of cash in circulation and no information is readily available on notes and coins individually. Hence, it is appropriate to dig deeper into the statistics on coins for better understanding.

This article addresses recent statistical trends of both payment instruments from various angles. It will start with some general statistics about coins vs. notes. Thereafter, it will focus on the note/coin boundary and trends in the issuance of new coin vs. note denominations. It will conclude with a study of the replacement of low-end paper notes on the one hand with high-value coins, and on the other with more durable note substrates.

Share of coins of cash in circulation

Let us start with the share of coins of the total cash in circulation and examine how this share has developed during the last 15 years or so. This development is depicted in Figure 1. The data was compiled in 2008 and 2023/24 (133 currencies).

According to Fig 1, the share of coins has been slightly decreasing. This means that the growth rate of the value of notes in circulation has been recently higher than that of the value of coins. This is understandable, because notes are

demand for both transactions and increasingly as a store of value, but coins are mostly used in small transactions or received as change.

There are, however, a few exceptions to this general picture. Because, particularly, low denomination coins are lost or hoarded by the public, they are deposited to central banks on a smaller scale than notes. This means that there is a continuous additional demand for coins even if the value of notes might decrease. Such development results in an increase in their share of cash in circulation.

Currently the share of coins is less than 2% for almost half of the 133 currencies. Many low-end coins have been withdrawn from circulation because of inflation, or because their production and distribution costs have become higher than their face value. At the same time, low-end notes have been replaced only partly with coins, because more durable substrates have been introduced increasingly to notes.

Before addressing these developments in more detail, the denominational structures of the currency series will be studied.

Denominational structures of currency series

The denominations of a currency series affect how many units of cash are required to make any given payment. The greater

the number of denominations, the fewer coins or notes will be needed.

Mathematically, the smallest number is required when the denominations follow a binary series 1, 2, 4, 8, 16 and so on, but calculations are difficult for values that do not follow the decimal system. Therefore, many countries have chosen a series that resembles the binary series as closely as possible: 1, 2, 5, 10, 20, etc.

However, it is not the only possibility and there are various traditions which may even differ between the note and coin series. For example, a series which doesn't include any '2's, (1, 5, 10, 50...) might be logistically easier to handle and store and from cost perspective more affordable, even if a greater number of pieces are needed than in a series resembling the binary series.

Figure 2 describes the current denominational structures of 148 currencies. Both coin and note series are divided into classes which follow 1) fully 1, 2, 5, ..., or 2) mostly 1, 2, 5 ... (one denomination '2' is not included in the series), 3) are closer to 1, 5, 10, ... (two '2's are not included in the series), or 4) follow fully 1, 5, 10... etc.

According to Fig 2 the most popular note and coin series is a series which resembles closely the binary series. Around 65% of the note series and 46% of the coin series follow fully 1, 2, 5, 10, 20 ... (including currencies which include a 2.5 or 3 denomination instead of 2 etc.). The main reason that there is a difference in the popularity of this currency structure between note and coin series is that in several cases the coin series doesn't include the denomination 0.02 or 2 while including the subunit (0.01) or unit (1) of the currency.

Note/coin boundary

Another issue related to the structure of a currency series is the note/coin boundary. A widely used system to define the boundary is the so-called D-metric model, developed by Payne and Morgan

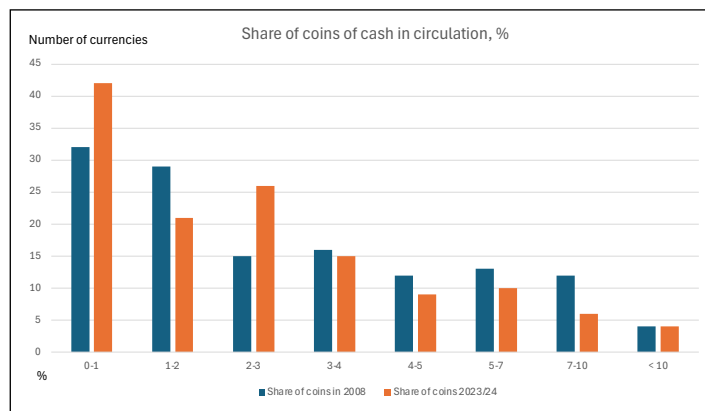


Figure 1. Share of coins of cash in circulation in 2008 and 2023/24 (133 currencies)

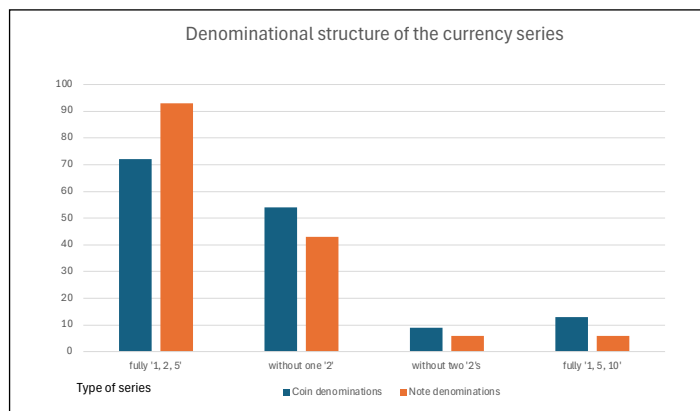


Figure 2. Denominational structures of coin and note series (148 currencies)

in the 1980s¹. They studied a number of currencies and observed that the transition point between coins and notes was between D/50 and D/20, where D is the average day's pay. Payne's and Morgan's study was not based on any theory but the result of their observations.

At the time of their study such durable note solutions we have today were not available. Therefore, it is not self-evident when making the same study today whether the note/coin boundary would be within the same range. However, two questions are interesting in this context – whether there is a clear transition point between coins and notes, and how often monetary authorities have replaced a low-end paper note with a high-value coin vs. a more durable note substrate.

The first question will be studied below and the second question in a later section of this article.

Logistically, the most appropriate solution would be a clear transition point between coins and notes, meaning that there is no overlap by the issuance of a common coin and note denomination. This is indeed the situation regarding the great majority of currencies, as depicted in Figure 3.

According to Fig 3, more than 73% of currencies have a transition point from the highest coin denomination to the lowest note denomination. However, 38 currency authorities are issuing at least one common coin and note denomination.

Denominational coin data is not available for all currencies. Based on those currencies from which data is available, it seems that when a common coin and a note denomination exists, the note is in most cases preferred by the public. Such examples are (in brackets the starting year of issuance of a common coin and note denomination and the current share of the coin): 1 EGP (2006: < 20%), 10 HKD (1993: 16%), 10 INR (2010: 24%), 10 MDL (2018:

27%), 10 RSD (2003: 20%), 20 LKR (2021: 7%), 1 USD (1971 (base-metal \$1 coin: 28%), and 50 UYY (2011: 24%).

Evidently, a common coin and note denomination might have a differing purpose. For example, in Germany before the euro cash changeover the DM5 coin was very popular in vending machines and the DM5 note was seen less frequently in circulation.

Reasons behind the introduction of a new note or coin denomination

There are basically two reasons to introduce a new coin or note denomination:

1) an inflation correction necessitates the introduction of a higher coin and/or note denomination, or 2) a new coin or note denomination inside the coin/note series is needed to make the series more effective. Of course, the objective to make the currency series more effective is also behind the inflation correction, but the root cause is inflation.

Introductions of new coin and note denominations have been classified based on these two reasons during three periods of equal length since 1992. Renewals of the entire coin and note series because of redenomination of the monetary unit have been excluded from the study. The results are illustrated in Figure 4.

The first observation regarding Fig 4 is that introductions of new high denomination coins and notes have decreased continuously. The development can be partly explained by the inflation periods in the 1990s following the collapse of the Soviet Union and Yugoslavia and the post-collapse transitions in many countries, as well as by the hyperinflation in some developing countries.

However, this was no longer the explanation during 2003-2013, or even during 2014-2024, when inflation did increase again by a bit. A more probable

explanation is that the accelerating development of new digital payment instruments has had an impact on the need to issue new high denominations.

Secondly, in view of the fact that the study includes 148 currencies, the issuance of a totally new high coin or note denomination seems to happen quite rarely. There are some extreme examples in this respect. The US\$1 coin has been the highest circulating dollar coin since 1794 and the Swiss 5 franc coin respectively since 1850. Similarly, the 1,000 krone note has been the highest note denomination in Norway since 1877.

The issuance of a new coin or note denomination to make a currency series more effective is an even rarer incident than the issuance of coin or note at the high end. Only a few cases have occurred recently, such as the new FCFA 200 coin of the Banque des États de l'Afrique Centrale or the 200 riyal note issued by the Qatar Central Bank in 2020.

Replacement of a low-end paper note with a coin or a more durable note substrate

Traditionally, an inflation correction to the currency series meant that a new high-value note was introduced, and simultaneously the low-end note was replaced with a high-value coin. Hence, it is interesting to study what kind of impact the development of more durable note substrates has had on this tradition.

The development will be again studied during three periods of equal length – 1992-2002, 2003-2013, 2014-2024. Renewals of the entire coin and note series because of redenomination of the monetary unit are again excluded from the study.

Durable substrates include polymer, composites and applied protective films. The study will focus only on the low-end note, ie. the note/coin boundary. Moreover,

¹ Payne, L. C., and Morgan, H. M., 'UK Currency Needs in the 1980s'. The Banker, April 1981, pp. 45-53.

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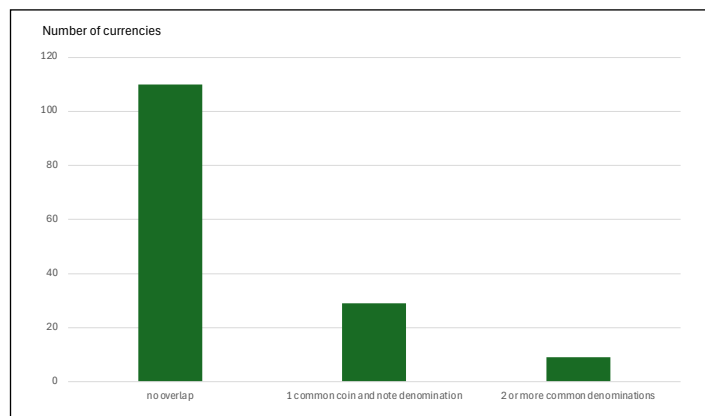


Figure 3. Transition point between coins and notes (148 currencies)

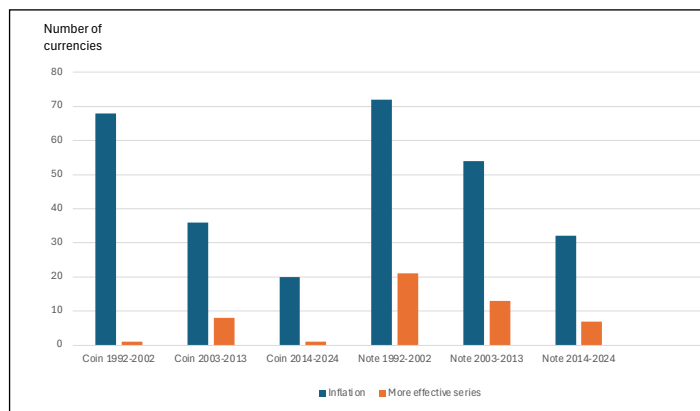


Figure 4. Reasons behind the introduction of new coin or note denominations (148 currencies)

... Coins v Banknotes

only transitions to more durable substrates which have shown to be permanent are included. The results of the study are illustrated in Figure 5.

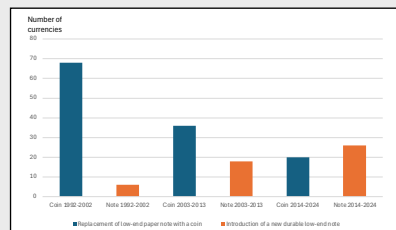


Figure 5. Replacement of low-end notes with coins or more durable substrates (148 currencies)

According to Fig 5, the introduction of more durable substrates to replace low-end paper notes has had a gradual negative impact on the use of coins for the same purpose. There were only six issuing authorities that began to replace the low-end paper banknotes with more durable substrates during the first period.

During the next period 2003-2013, coins were still used in the majority of new decision-making situations regarding the note/coin boundary, but during 2014-2024 more than half of the issuing authorities which were confronted with the situation selected a more durable note substrate. This means that the note/coin boundary is changing no more often than it used to do in the past.

Concluding remarks

The study on recent global trends regarding coins vs. notes has led to some interesting results. It is perhaps not surprising that the share of coins of the total cash in circulation is decreasing, because notes are increasingly used also as a store of value. However, some differences between the denominational structure of coin vs. note series are of interest.

The traditions regarding the denominational structures of currency series seem to be very strong, because new denominations inside the series are introduced in only a very few cases.

The result which will likely be followed with greatest interest is the development of the use of coins vs. more durable note substrates in replacing low-end paper notes – particularly in view of the increasing number of suppliers of more durable note substrates.

A (Moving) Picture Tells a Thousand Words

At the Currency Conference in May, Bundesdruckerei presented visuals of the latest house note in its ExNihilo series (see page 14). To do so, it used an ingenious new tool from Koenig & Bauer Banknote Solutions (KBBS) – Nota-Live™, which provides accurate live simulation of security documents, complete with realistic optically-varying effects, offering an exceptionally accurate and dynamic way to visualise the designs of these documents.

Nota-Live has been purpose-built for the unique characteristics of banknotes and other secure documents (eg. passports and ID documents), offering specialised tools and features tailored to support their inherent complexity and sophistication. Described as redefining the way banknotes are conceptualised and presented, it is based on more than a decade of light field research by KBBS partner Fathom Optics and took six months to jointly refine and develop into its current form. It was launched publicly earlier this year.

Nota-Live enables world-class rendition of nearly any optically-varying feature, and at the core of this is support for SUSI Optics® Jazz™, the latest innovation in the SUSI Optics family. Jazz uses KBBS Super Simultan (SUSI) presses to achieve ultra-high-resolution, two-sided printing with best-known registration. In collaboration with Fathom Optics, KBBS developed a version of Jazz that can be used on the transparent or semi-transparent windows of security documents. This is made possible by a combination of high-level front-to-back registration and dedicated offset inks with controlled density. The result is a print that creates the illusion of movement and depth or an image flip – without the need for lenses.

After recognising the major advantages of 3D interaction in designing with Jazz, as compared to using rendered stills or video, the company expanded the scope of Nota-Live to support virtually all security features and on virtually all substrate types – eg. OVDs, OVI and even UV-activated inks and on substrates with or without windows – faithfully simulating each printing process for both the front and reverse of the document. Still not content with the soft launch earlier this year, KBBS is already working on enhancements – including 'call-outs' that point to certain elements for further descriptions, videos or links to suppliers.

As such, says KBBS, Nota-Live is a game-changer for designers, allowing them to preview the final product with unparalleled precision. Additionally, it is a powerful asset for sales teams, enabling them to showcase design concepts effectively and impressively. And beyond design and sales, Nota-Live™ can also serve as an educational tool for the public, helping central banks to introduce new banknote series when they are released into circulation.

As Sebastien Perret, Head of Design & Pre-Press Solutions at KBBS, explained, it can be difficult to motivate central banks on the benefits of different features and their integration into the overall design, or indeed on the design itself, without something that actually demonstrates how the features and the banknote as a whole will look and function. To date, companies have used videos, which are costly and time-consuming to put together and aren't interactive. But none have developed the software to assemble the different 3D elements (be they video clips, images, digital files or scans) quickly and cost-effectively, and to demonstrate how they work together.

In a nutshell, Nota-Live creates something as close as possible to an actual proof without actually being a proof, but in a fraction of the time and at a fraction of the cost.

Nota-Live generates standalone files that can run on any web browser and can be used offline, without requiring an internet connection. As an independent software solution, it doesn't rely on specific predefined design tools and, says KBBS, is fully compatible with a wide range of commercial and security design software, including Illustrator, Arziro, Corvina, and ONE Software, thereby adding value to the workflows already in use.

Some of the specific attributes of Nota-Live include:

- Modular and easy to implement
- Precise, realistic, and dynamic rendering of designs, including intricate details
- An intuitive interface for easy navigation and control
- Partnership opportunities for developing custom features
- Performs equally well on computers, tablets and phones, and both online and offline.

At the moment, Nota-Live is being used by the KBBS' design team and several major industry partners who have already purchased licences, and the intention is to bring the capabilities of 3D interaction to all those designing the next generation of high-end security documents.



Sequential Banknotes: from Manual to Automated Production

In China, commemorative banknotes are more than just banknotes; they serve as carriers of significant historical memories, reflections of Chinese culture, and symbols of national achievements. Because of this, the country sets a high store on quality standards for each note. Among the features most valued by collectors is the presence of consecutive serial numbers – the more unique and uninterrupted the sequence, the greater the collectible value.



However, ensuring perfect serial number continuity across commemorative banknotes is a highly challenging task.

All commemorative banknotes produced by China Banknote Printing and Minting Corporation (CBPM) must withstand rigorous quality inspections before leaving the factory. If a defective banknote is identified, it must be removed and replaced with a new one. The replacement banknote is then inserted into the correct position within the sequence to maintain the continuity of serial numbers.

Traditionally, this process has been performed manually, which is both inefficient and error-prone. In particular, commemorative banknote production is often time-sensitive and requires

skilled labour, and the limited availability of trained personnel was becoming a major constraint.

To address these challenges, engineers at CBPM have developed a fully automated banknote insertion machine. This innovation not only accurately identifies the correct insertion point for replacement banknotes but also performs the insertion at high speed, while simultaneously verifying the continuity of serial numbers.

Key features of the machine include:

- **High-speed insertion:** the machine can insert up to 25 banknotes per second, completing the insertion of 600,000 banknotes within 8 hours – a workload equivalent to that of 50 manual workers.

- **Intelligent error correction:** in addition to automatic insertion, the machine can switch among multiple operational modes based on production requirements, including 'insertion without removal', 'removal and insertion', and 'removal without insertion', enabling flexible handling of various production scenarios.

- **Seamless connection:** throughout the entire production process, the production line remains in continuous operation without interruptions. The assignment of serial numbers and quality inspections are seamlessly integrated into the workflow, ensuring the uninterrupted sequential numbering of commemorative banknotes.

According to CBPM, the introduction of this automated banknote insertion machine has significantly improved production efficiency. It has relieved workers from repetitive and physically demanding tasks, effectively ending the era of inefficient manual insertion. For banknote printing works, it has significantly shortened the delivery cycle of commemorative banknotes. For collectors, it ensures the acquisition of high-quality products with fully consecutive serial numbers.

Today, this automated banknote insertion machine has become a key technological asset for CBPM. It not only meets the high quality requirements of commemorative banknote production but also allows for customised solutions tailored to customer needs.

Authentix Powers Crypto Banknote with Next Generation Security

The ultra-fast trading platform Fastex recently announced the release of a series of collectible currency notes, each backed 1:1 by FTN token, the platform's native cryptocurrency. Unveiled in early July at the Harmony Meetup 7 in Yerevan, Armenia, the annual event that unites top minds from Web3 and iGaming, these notes feature banknote-grade anti-counterfeit features provided by Authentix.

The notes include serial numbers, intaglio ink, optically variable ink, and metallic security foil along with designs based on the planets in the solar system, and are produced on polymer. They were designed and printed by Royal Joh Enschedé (the former Dutch banknote printer, which was acquired by Authentix in 2023). Each note is redeemable at any time for its full value in FTN on the Fastex exchange, with Authentix ensuring the integrity of each note as FTN's third-party authentication provider.

According to Authentix, this collaboration marks a significant milestone in merging traditional banknote security with blockchain innovation, offering users a tangible and secure way to engage with digital assets. It also highlights the growing importance of authentication and verification in the Web3 space, with the Fastex banknote initiative setting a new benchmark for how physical and digital assets can coexist securely.

The currency notes are fully asset-backed and redeemable for their full value in FTN on the Fastex exchange. Users can verify authenticity through NFTs linked to each note, which are burned upon redemption, adding another layer of digital security.

With this project, says Authentix, Fastex becomes the first Web3 crypto exchange to offer a secure, physical banknote paired with the digital cryptocurrency token registered on its exchange platform.



What is the Value of Cash?

Perhaps this feels like a nugatory question. But when you consider that between 2003 and 2024 there were five times as many studies about the cost of cash than about its value, and that the cost studies were mostly based on numbers while the value studies were more theoretical or descriptive, then the question starts to make sense.



The importance of cash was a recurring theme during G+D's Currency Technology Symposium (CTS) in July.

Dr Wolfram Seidemann, CEO of G+D Currency Technology, spoke on the first afternoon about designing the future of money. Given that it took 100 years between the invention of the light bulb and there being a billion users, but only 60 days for there to be a billion users of ChatGPT, there is some urgency to get this right.

G+D is focused on designing the future of money around the five A's – access, availability, acceptance, authentication, and affection – and presentations and workshops provided options and thoughts on these topics.

An important question raised was how society can avoid policy failures caused by a lack of data on the value of cash? The International Currency Association (ICA), of which G+D is a part, is working with Prof Dr Julia Pitters, Professor of Business Psychology at IU International University of Applied Sciences, to fill the data gap that exists.

Project team

Led by Dr Pitters, research partners and contributors include Franz Seitz (University Weiden), Erich Kirchler (University of Vienna), Tobias Trütsch (University of St Gallen), Dominik Enste (University of Applied Science Cologne), Andreas von Loeper (G+D), and Frane Maroević (ICA).

Study design

The study examines the monetary and psychological benefits of five factors through which cash impacts society:

■ National security and resilience

Cash is critical infrastructure, a core element in national security and resilience. The extended power outage in Spain earlier this year is a good example of how important cash is. Caixa Bank research from June 2025 on the economic impact of the blackout found that the cashless payment system failure in Spain cost 0.1% of GDP. Consumption fell 34% during the outage, underlining the economic importance dependency.

■ Freedom and privacy

The Knuemann, Krueger, Seitz 2025 paper – 'The Cost of Cash and Card Payments from a Consumer Perspective' – found that data protection has a clear value to consumers. Data protection comes at a high cost for digital payment infrastructure in the long term, €3.6 billion per year in Germany, the equivalent of €0.43 per transaction or 0.1% of GDP.

■ Inclusion and access

According to a 2022 World Bank Group report, one in four adults are without access to bank accounts or formal financial services (the 'unbanked'), about 1.4 billion people. This is not just an emerging and developing economy problem; in the US 4.2% of households are unbanked. The groups who are particularly vulnerable are women, low-income groups, the elderly and the youth.

■ Societal significance

This category includes cost control and financial 'discipline'. The cost of indebtedness and the increasing gap between rich and poor feature here.

■ Competition and independence

Informal services create real economic value, often enabled by cash. A paper by F Schneider in 2019 estimated that the informal economy generates up to 10% of national output, a third of informal projects rely on cash to happen, and socially beneficial informal work contributes 3% of GDP.

Advocates for digital payments are quick to link cash usage to tax avoidance and other criminal activities. However, organised crime and those engaging in corruption are increasingly using cryptocurrency rather than cash.

Although not in Dr Pitters presentation, it is also worth considering that using cash in preference to digital payments may reflect societal frustration with government

policies – too much bureaucracy, a sense that taxes are too high – and effectively act as a pressure release valve.

Again, not part of Dr Pitters presentation, one could also argue that cash has a role acting as a competitor to private digital money. If the private sector abuses its position, the population always has an option to revert to cash. This too, is an argument used to justify a possible future Central Bank Digital Currency.

There is also anecdotal evidence that some people use cash as a method to avoid the widespread criminal activity that now comes with digital payments. It will be interesting to see whether this increases in the future.

Once the data is collected, two indices will be created, a compound cash value index relating to the monetary benefits, and a 'moderating' index applicable to the psychological benefits.

An electronic poll of the central bank attendees ranked the top three most important impact factors as national security and resilience (37%), inclusion and access (31%), and freedom and resilience (20%). Interestingly, at the 2024 Global Currency Forum, the mixed industry/central bank audience there had selected national security and resilience, freedom and privacy, and debt as their top priorities.

Project road map and next steps

The project path is:

- Map and distinguish the monetary compared with the psychological value of cash
- Prioritise studying security, privacy, and debt. The plan is to conduct a field study in the autumn this year
- Collaborate with partners such as central banks to improve data and model quality
- Present the findings at the Global Currency Forum in April 2026 in Antalya.

Final word

This work is important if we are to avoid becoming the man Oscar Wilde described as knowing, 'the price of everything and the value of nothing'. It will help all to understand and accept that cash is more than just being a token of exchange.

This study, with its quantitative approach will allow cash to be understood as being more than 'just a cost'. By putting a number on the role of cash in securing and delivering national security, financial inclusion, resilience, and public trust, it will help public policy makers, and the public, consider the future of cash with a broader awareness, backed by data, to make informed decisions about the future of cash.

Note and Coin News

Bolivia's Bicentennial Commemorative Banknote

Amidst the gradual introduction of a new banknote series, Banco Central de Bolivia (BCB) has also launched a new bicentennial commemorative banknote, which was unveiled earlier this month at a special event attended by the country's President at the Casa de Libertad in Sucre, a heritage museum and former church where the country signed its declaration of independence in 1825.



The non-denominated banknote was printed by Crane Currency on GUARDIAN™ polymer substrate and is a collectible (the numeral 200 represents Bolivia's 200 years of independence, not the value). In addition, gold and silver collectors' coins

and a circulating commemorative Bs2 coin have been produced.

The design of the note combines a number of tributes to the nation's culture and history. On the front, it honours eight independence heroes, including Simón

Bolívar, Antonio José de Sucre, Tupac Katari, and Juana Azurduy. A MOTION SURFACE® stripe in blue is featured on the right. Its visual effects bring to life a pandemonium of Blue Paraba (macaws) flying over a shape-shifting landscape, while the central bank initials BCB swirl inside a three-dimensional globe. The years 1825 and 2025 are printed in green-to-magenta colour-changing ink.

On the reverse, the note showcases the Casa de Libertad, toborochi tree, a shadow image of the Potosi Masque, and Oruro miner's helmet sculpture.

A transparent window, which is a key feature of the GUARDIAN substrate, displays an eye-catching and complex VIVID Colour™ feature, visible on both sides of the note. It appears like a CAMEO (ie. a tonal portrait) in normal light, but under UV light, the natural landmarks – the Illimani Mountains, the Salar de Uyuni, and the rare pink dolphin—fluoresce in brilliant colour.

'We are certain that this tribute will perpetuate the heritage of our heroes, so that the next generations do not stray from what has been built during these two hundred years and forge, with the same courage and commitment of those who wrote the first lines of our history, the future that Bolivia deserves', said President of Banco Central de Bolivia, Mr Rojas Ulo, at the ceremony.

In Other News...

■ The Royal Mint (TRM) has announced that just over 30 million new £1 coins are entering circulation across the UK, including 23.3 million of the final £1 coins featuring the effigy of the late Queen Elizabeth II. Dated 2022, they will, said the TRM, be the rarest £1 coins in active circulation. The balance of new coins feature the effigy of the King.

Since the introduction of King Charles III's portrait on UK coinage in 2023, the 50p and £1 are the only denominations that have entered circulation bearing his effigy. The new coins feature an intricate bee design on the reverse. They are one of eight new designs introduced in 2023 that appear on the nation's coins, from the 1p to the £2, which feature animals such as the Hazel Dormouse, Puffin and the Atlantic Salmon.

■ The State Bank of Pakistan (SBP) has finalised the shortlist of designs for the country's new banknote series. All that is now needed is the final green light from the Cabinet before production can begin.

The new series was first announced last year, and a design competition was held to come up with themes and concepts. It was believed that the first notes would be issued late in 2025, but with the designs

only now being agreed, there is some way to go before the new banknotes see the light of day.

■ Two kings feature on the Falkland Islands' new banknotes – King Charles III as head of state and the king penguin, the largest of the many species of penguins that inhabit the South Atlantic islands.



The new polymer notes, in denominations of £5, £10, and £20, were designed and printed by De la Rue, and went into circulation on 14 August, Falklands Day. The design, which is common to all three notes, references the first recorded sighting of the Falkland Islands on 14 August 1592, with the inclusion of the national motto

'Desire The Right' and imagery of the Pale Maiden (the national flower).

In addition to the King and Pale Maiden, the notes also include images of black-browed albatrosses in flight, Steeple Jackson Island (where the largest colony of said albatrosses live), and five species of penguins. The king penguin appears in the transparent window.

This is the first redesign since the early 1980s. And whilst the Falkland Islands also issues a £50 note, this has not been included in the redesign as there are sufficient stocks to last several decades.

■ The Bank of Mexico has issued a silver coin and a set of circulating banknotes inscribed on the front with the legend '100 Aniversario / 1925-2025' to mark its centennial.



(House) Banknotes of the Month

In this version of Banknote of the Month, we are focusing on some of the latest and best house notes, specifically those which have been released at the Currency Conference in May or the High Security Printing (HSP) Latin America conference in June.

■ Out of Darkness Comes... STELLA

Bundesdruckerei (BDR) introduced the first in its ExNihilo family of four house notes at last year's Banknote Conference. The name is derived from 'ex nihilo nihil fit', or 'from nothing comes nothing' – with BDR's ideas for new technologies coming from the starting point of 'nothingness', a state where everything is absent, including light. The physical embodiment of this, as relates to the first two of the four notes in the series, is their most distinctive feature – namely they are black, defying banknote convention.



The first in the series – IGNIS – centred around fire. The second – STELLA – is inspired by stars. And its focus is on sustainability.

This focus explains the size of the note, at 85 x 54mm (ie. the same as a credit card) and the choice of substrate (GUARDIAN™ polymer). The size minimises material usage and is very production-efficient, fitting 100-up on a traditional sheet. The size also means that it doesn't need to be folded to go into wallets.

This reduced size has led to the use of features that extend to the edges, including tactile marks in the form of notches cut into these edges.

The front of the note is dedicated to the birthplace of carbon – ie. stars. The use of special pigments enables the black surface to reflect rather than absorb light, so that the stars can be seen against the night sky represented by the all-black background.

Two windows (top and bottom) incorporate SUSI Jazz. A third window in the centre is set, on the reverse, within the iris of an eye (which glows gold and green). The actual technology that will represent the pupil of the eye (ie. the window) is a new one that will be revealed next year.

At this stage, the note is a simulation only, utilising Koenig & Bauer's Nota-Live platform for visualisation (see page 10). The actual note will be unveiled at next year's Banknote Conference.

■ Inspired by Nature

Another stunning – albeit somewhat more conventional – house note demonstrated at the Currency Conference was the Meadow note from Polish Security Printing Works (PWPW), produced in collaboration with KURZ.

According to PWPW, the Meadow note is a perfect blend of advanced security features, artistic design, and eco-friendly solutions. Inspired by nature, it presents a detailed cross-section of a meadow, capturing the beauty of its flora and fauna across different layers. The upper part of the vertically-oriented note depicts the sky, with trees and flying insects, the middle section dragonflies, flowers and more insects, while the lower part goes underground, featuring roots, bugs and a mole.



The note is printed at PWPW's paper mill from an eco-friendly blend of cotton and hemp fibres (the latter is sourced from within Europe and requires significantly less energy to process than cotton).

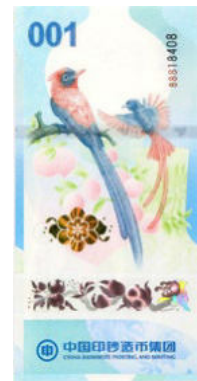
It includes a multi-tone watermark and a second hidden watermark, Multihexa®, embedded within a unique filigree structure. It also features a MIR4Note® machine readable two-colour iridescent stripe, a Zora4Note® multicolour latent image, and UV inks, and is overvarnished with Coat4Note® Gloss.

But perhaps one of the most striking features of the note is the vertical registered windowed KURZ THREAD with KINEGRAM COLOR. It is precisely aligned so that an individual colour and specific diffractive image appears in each of the six separate windows.

■ Pandas and Paradise in China

China Banknote Printing and Minting (CBM) presented not one but two house notes in Rio. One features the Paradise Flycatcher, a bird symbolising auspiciousness and

happiness, and whose long tail feathers denote longevity. The main design on the reverse is the Great Wall of China, the greatest feat of engineering in ancient China.



The note is produced on paper and security elements include SPARK® Flow Dimension in the shape of a flower, intaglio print, a high definition watermark, and two new features. One is a 6mm wide Dual MoveColor® windowed security thread with colour shift and freeform microstructures that create scrolling, zooming and dynamic 3D effects. The other is a LiveColor® stripe with a number of dynamic images generated by different optically variable effects, including holography, colour shift and zero tolerance demetallisation.

The paper note was devised to demonstrate, in particular, the company's new ColorSpace® micro-optics technology that is incorporated into both the thread and the stripe, and which demonstrates exceptional brightness together with strong stereoscopic and motion effects.

The second of the notes is on polymer, which CBPM now produces and prints at its new facility in Guangzhou. The main theme of the front is a giant panda and its cub (pandas being one of China's national treasures and loved around the world). The reverse features a cargo ship and the China-Europe freight train, both symbolising the country's Belt-and-Road initiative.



Again, the note is intaglio-printed with SPARK® Live for the numeral (001) and a LiveColor stripe in the note's window.

One of the main objectives of this note was to demonstrate the successful use of the low-VOC coating for the substrate, which was developed in collaboration with SICPA.

Water-based and eco-friendly, the coating is less flammable or explosive than organic solvents, making it easier to store and transport and better for employee health.

In addition, said CBPM, it enables faster production; with a shorter curing time, the printing speed can reach up to 100m/min without set-off, the substrate can be sheeted at a speed of 120m/min and counted 24 hours after gravure without any peeling off of the coatings, and the banknote can be printed seven days later.

The coating also performs well during printing, with sharp lines, no set-off or smearing, and good physical and chemical durability of the finished product.

■ Good Luck and Good Fortune

In last month's issue of Currency News, we covered the Boa Sorte (Good Luck) house note from Casa da Moeda do Brasil (CMB) from the perspective of the substrate (it is the first to be produced on Fusion™ polymer from Spectra Systems). Now, we take a look at the design rationale, which is an interesting story in its own right.

The theme chosen was a travelling circus, with a fortune teller as the central character, unveiling peoples' destinies through her crystal ball (which forms the window in the note). Other images include a juggler, horse, trapeze artist, and clowns. As the circus is common in popular culture around the world, five languages were chosen to display the phrase 'What Does Your Future Hold', one for each continent.

According to CMB, gazing into the crystal ball transports you to the reverse of the note, where the theme is a wish for good luck to all humanity, expressed through symbols of good fortune across a wide range of cultures (including an elephant, cat, four leaf clover, rabbit paw, wishbone, and ladybird).



Other overt features include blue-to-green SPARK Flow Dimension depicting a clover leaf and the lucky number 7, and the digital watermark look-alike Kryptonome™ from Oberthur Fiduciaire.

The Boa Sorte was not the only new house note unveiled by CMB. It won the inaugural Best New House Note for the region for its Cotton Cycles House note, the second in a series designed to highlight the environment and sustainability in features and substrates, in addition to unveiling the third, the Rio note.

The first note in the series, produced in 2023, was entitled Mint Worker, and was produced on paper made from fibres recycled from banknote production waste.

The Cotton Cycles note, produced in 2024, was a joint effort between CMB, BlendPaper, and Hueck Folien, and was produced to highlight the importance of using natural resources in the production of banknotes, and reducing resource waste. These themes were explicit in the design of the note, with the history of cotton cultivation featuring on the front, and the production of security paper from banknote waste on the reverse.

Casa da Moeda do Brasil printed the note on a substrate from BlendPaper made of recycled fibres from shredded Brazilian real banknotes under the Tran\$forma project, which enables the reuse of banknote fibres as raw material for new security papers. The Optomove® micro-optics security thread was made from recycled PET and aluminium and supplied by Hueck Folien.

The Rio note, meanwhile, paid tribute to the iconic topography and culture of Rio de Janeiro and was produced to mark its location as the host city for HSP Latin America 2025.

The front was designed to showcase the blend of beauty and nature, capturing some of Rio's more iconic landscapes, among them Corcovado Mountain (on which stands the Christ the Redeemer statue) and Sugarloaf Mountain, at sunset. Under UV light, the night sky is revealed with the statue illuminated, along with fireworks representing the city's unique beachfront New Year celebrations.

The reverse of the note, meanwhile, is dedicated to cultural landmarks in Rio.

Mineral oil-free intaglio inks were used throughout, while the substrate was a Highlink™ banknote paper (incorporating a latex solution that bonds the fibres to create more mechanical strength). 15% of the fibres were from Brazilian sisal (which require less water and fewer agricultural inputs than cotton) and 15% were recycled through the Tran\$forma project. 90% of the Highlink solution, meanwhile, was plant-based.

Security features included a mould-made watermark of the Brazilian flag with electrotpe, Oberthur's micro-lens security thread Anima™, SPARK Flow Dimension in the shape of a hang glider, and UV inks.



New House Note Supplement

Currency News™ will publish its third special supplement, 'Concept Notes: Art, Design and Security in One', in Spring 2026 – featuring the latest concept (house) notes from across the industry.

We're inviting submissions of such notes produced since January 2024. The supplement will highlight cutting-edge design, security features, technologies, and collaborations between printers, and substrate and feature suppliers.

If you have a concept note that you would like included, please contact us at info@currencynews.com. The deadline for submission of materials for the supplement is 31 January 2026.



ACMA at Asia Cash Cycle Seminar in Bali

The Asia Cash Management Association (ACMA) is gearing up to play a pivotal role at the upcoming Asia Cash Cycle Seminar in Bali, Indonesia, 22-24 September.

A leading advocate and voice for the cash handling industry, ACMA is a platform for cash management companies (CMCs) to enhance their professional reputation and standing within the broader cash management industry.

ACMA's involvement in the Currency Research-hosted Seminar is an extension of the critical conversations begun in Bangkok at the recent Currency Conference.

Its activities are split into three distinct sessions:

- 1. Annual General Meeting (AGM):** on Monday 22 September, member organisations have the opportunity to reflect on the state of the industry, set the association's strategic direction for the coming year, and strengthen and reaffirm ACMA's advocacy of best practices for the region's cash management industry.
- 2. Workshop:** Ensuring the Viability of the Cash Cycle – Challenges and Solutions for the Future. Featuring a mix of expert insights, collaborative breakout sessions, and interactive dialogue, this ACMA-hosted workshop will focus on

developing actionable insights to the critical operational, regulatory, and technological challenges threatening cash's continued viability. ACMA member organisations – CPT Group, Brinks, Prosegur, Glory, and Spearpoint Group – will direct the workshop.

- 3. Panel Discussion:** The Risk of Systemic Failure. ACMA will also lead the Seminar's final panel discussion, examining the multitude of factors contributing to a contracting commercial market, the potential threat of system-wide failure, and what the cash management industry can do to mitigate these developments. Panellists will include representatives from CPT Group, Prosegur, and Bank Central Asia.

acma-asia.org.

Events

9–11 SEPTEMBER 2025

CBDC CONFERENCE

Nassau, Bahamas

cbdc-conference.com

15–17 SEPTEMBER 2025

**OPTICAL & DIGITAL
DOCUMENT SECURITY**

Warsaw, Poland

opticaldigitalsecurity.com

22–24 SEPTEMBER 2025

THE ASIA CASH CYCLE SEMINAR

Bali, Indonesia

currencyresearch.com

3–5 NOVEMBER 2025

THE FUTURE OF CASH

Warsaw, Poland

thefutureofcash.com

10–13 NOVEMBER 2025

MINT AND PRINT

Istanbul, Turkey

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Publisher: Currency Publications Ltd (a Reconnaissance/Currency Research company).

Editor: Astrid Mitchell (right).

Editorial Advisors: Richard Haycock, Martyn White.

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Annual subscription rate: from **£1,595** plus postage (also includes the Currency Index database and Currency Publications bi-weekly updates). Ask about subscriptions for multiple access, including to the Currency News e-publishing platform.

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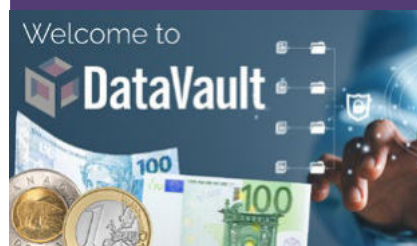
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ISSN 2516-6336



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