The future of machine money – opportunities for stablecoins in Europe

DIGITAL EURO ASSOCIATION

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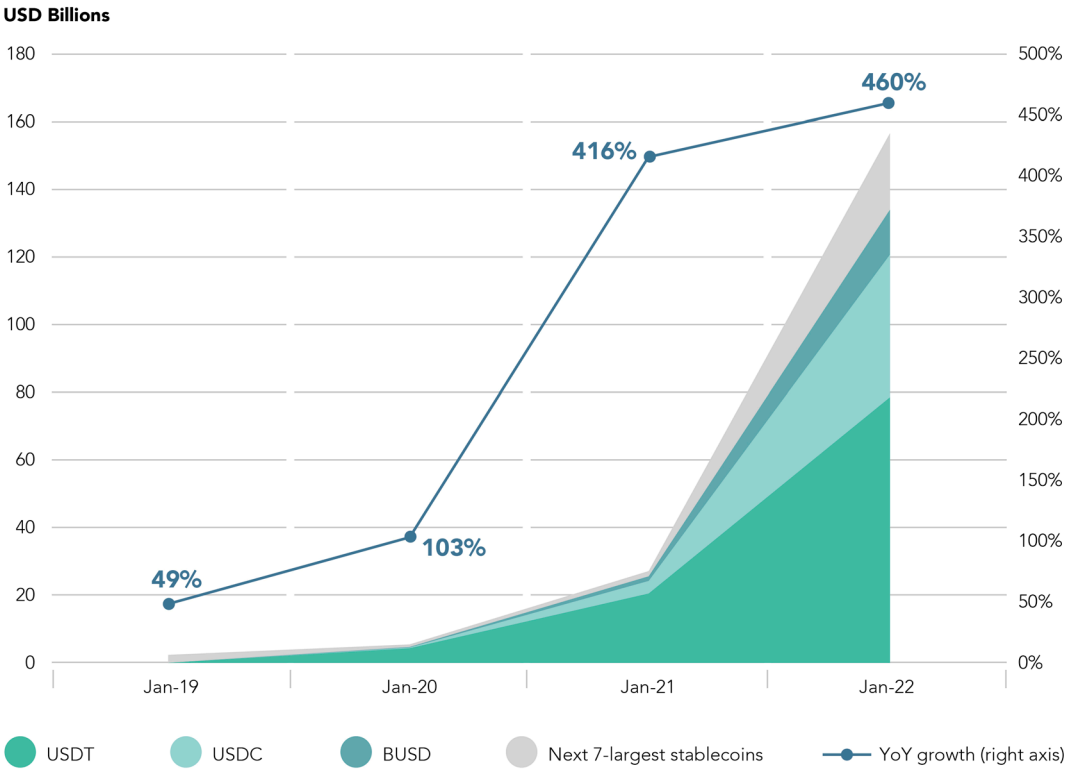
1. Introduction

Alongside the explosive growth in crypto assets in recent years, stablecoins have also experienced tremendous development. In March 2022, before the TerraUSD collapse, the ten largest stablecoins were valued at about USD 164 billion,[3] an increase of 460% compared to the previous year (see Figure 1). While much has been said of the risks associated with stablecoins, there is a lack of insight into how their use cases will continue to evolve, the potential and future opportunities they bring to drive European digitalization, and what that could spell for Europe in the coming decades.

Figure 1. Market capitalization of top-10 stablecoins

Source: CoinGecko

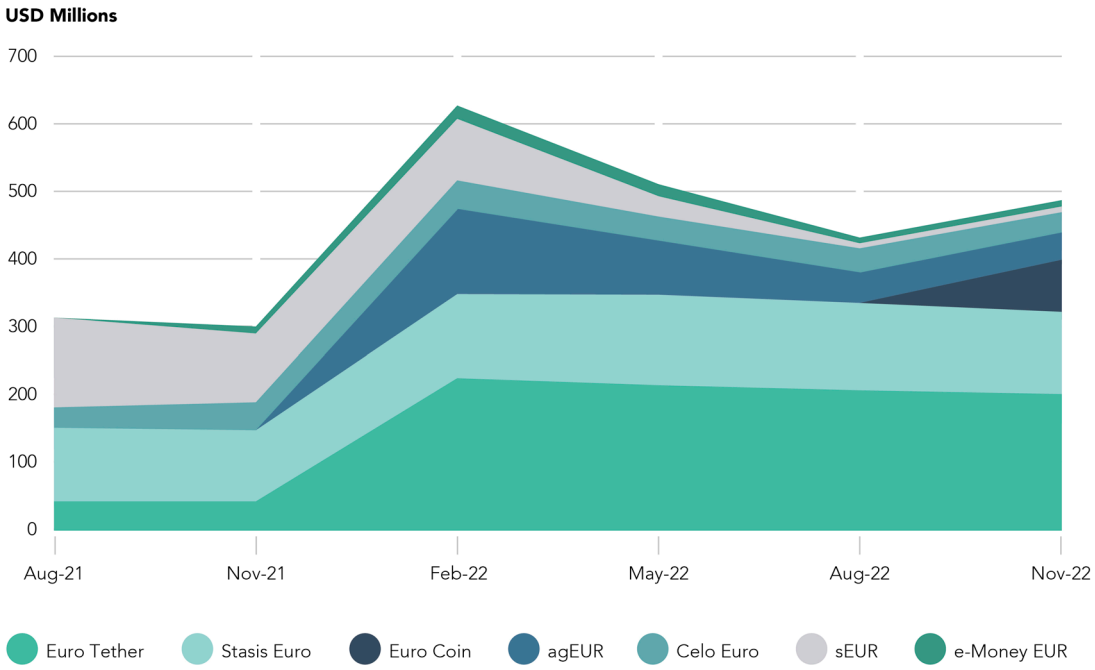


[1] We extend our sincere thanks to Binance for supporting this research.
[2] Additional acknowledgments: We would like to thank Geoffrey Barnard (Machine-To-Machine Intelligence (M2Mi) Corporation), Peter-Antonius Bramm (SAP), Hugo Coelho (Binance), Viktoria Huber (SAP), Helge Koenigs (Daimler Truck), Rana Kortam (Binance), Rick Lamberty (Bosch), Thomas Michalski (Infineon), Nadia Pocher (UAB), Bernhard Schweizer (SAP), and Jochen Siegert (Deutsche Bank) for their helpful comments on this piece of research.
[3] https://www.statista.com/statistics/1255835/stablecoin-market-capitalization/

Although Europe has one of the largest cryptocurrency economies in the world, growth in EUR-based stablecoins has been relatively tepid to date.[4] In November 2022, EUR-based stablecoins represented less than USD 500 million in market capitalization (see Figure 2), or around 0.2 percent of the total stablecoin market.[5]

Figure 2. EUR-based stablecoins market capitalization

Source: CoinGecko



However, several factors point to significant growth in the issuance and usage of EUR-based stablecoins in the future. The forthcoming Markets in Crypto-Assets (MiCA) regulation gives clarity on the requirements that stablecoin issuers must comply with and encourages end-user adoption by putting in place measures aimed at protecting consumers. Against this backdrop, demand for recently issued EUR-based stablecoins by US-based issuers (e.g., EUROC) has been significant[6], putting pressure on the European market to respond with their own offerings. As a result, many have wondered in which use cases and industries EUR-based stablecoins are likely to gain traction. Outside of providing access to DeFi markets, typical stablecoin use cases have focused on improving financial inclusion or reducing the costs of cross-border remittances, which may not be so compelling in a European context.

That said, Europe could become a global innovation leader if it makes breakthroughs in the development of the Internet of Things (IoT) - and particularly machine-to-machine (M2M) - payments a key priority, with stablecoins potentially playing an important role in this regard. This paper will examine the role that stablecoins could play in driving growth in the European M2M economy over the near- to medium-term. First, we review current and future stablecoin use cases. Second, we consider the outlook for M2M payments in Europe and the role that stablecoins could play in enabling their growth. Third, we examine specific industries and use cases in which stablecoin-based M2M payments could thrive. Last, we examine the regulatory gaps and policy issues that still need to be addressed by regulators to better facilitate growth in this area.

[4] https://blog.chainalysis.com/reports/central-northern-western-europe-cryptocurrency-geography-report-2021-preview/
[5] https://www.ecb.europa.eu/pub/pdf/ire/ecb.ire202206~6f3ddeab26.en.pdf
[6] Market capitalization of EURC reached EUR 80 million just four months after its issuance, becoming the third largest EUR-based stablecoin (refer to Figure 2).

2. Current use cases for stablecoins

In addition to serving as a gateway into crypto trading, acting as a safe parking space from crypto market volatility, and providing access to decentralized finance (DeFi) markets, stablecoin use cases have focused on improving financial inclusion or facilitating cross-border payments for underserved populations. In this section, we provide an overview of the different current stablecoin use cases.

- **Trading**
  Collateralized stablecoins are constantly used to trade digital assets. Traders often exchange fiat for a stablecoin and then execute trades with the stablecoin for another cryptocurrency (or vice versa) as a solution to avoid fees associated with moving in and out of fiat currencies. They are also used as a safe "parking space" at times of high market volatility for unbacked crypto assets.

- **Cross-border remittances**
  To a lesser extent, collateralized stablecoins are being used to facilitate instant peer-to-peer cross-border payments.[7] In general, stablecoins have the potential to provide an efficient means of cross-border payment because they may benefit from economies of scale and their potentially high technological efficiency.[8] Cross-border transfers via traditional correspondent banking channels can take multiple days to process and often demand high fees. Therefore, stablecoins can truly have a positive impact for use cases across the three different categories of cross-border payments (wholesale, retail and remittances).[9] In particular, they may be able to deliver cost, time, access and transparency benefits for the USD 589 billion global remittances market.[10] According to some industry sources, the use of blockchain technology may help financial entities save more than USD 27 billion on cross-border settlement transactions by the end of 2030.[11]

- **Inflation hedge**
  Additionally, some unstable economies are adopting cryptocurrencies as a palliative mechanism for high inflation and exchange rate volatility. The erosion of the purchasing power of official fiat currency has been especially severe in developing nations such as Venezuela, Lebanon, Turkey, Suriname, Argentina and Sudan. In these environments, fiat-backed stablecoins have proven to be effective as an inflation hedge and temporary store of value.

- **Decentralized Finance**
  To date, stablecoins have strengthened the bridge between traditional finance and crypto markets. They have played a key role in developing DeFi markets, providing most of the liquidity in DeFi applications (lending protocols and decentralized exchanges, among others). Stablecoin usage has helped to develop an entire ecosystem around trading, lending, derivatives, and asset management by using blockchain and smart contracts. Stablecoins have been used by investors to generate yield on their crypto assets in the DeFi market and at the same time, alleviating the potential adverse effects of market volatility.[12] The major fiat-collateralized stablecoins, such as Binance USD, USD Tether and USD Coin, however, are mainly used for other purposes in the cryptocurrency ecosystem. Their liquidity provision for decentralized trading or lending is low compared to their total market capitalisation (usually less than 10%).[13]

- **Settlement of tokenized securities**
  Tokenizing securities involves issuing new securities or presenting existing ones as digital tokens. One of the purposes of tokenization is reducing costs and complexity.[14] In this respect, stablecoins may be used in the tokenized financial instruments market: securities could be converted into digital tokens on DLTs and traded through stablecoins.

[7] https://www.federalreserve.gov/econres/ifdp/stablecoins-growth-potential-and-impact-on-banking.htm
[8] https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2693~8d4e580438.en.pdf
[9] https://www.fsb.org/wp-content/uploads/P131021-2.pdf
[10] https://blogs.worldbank.org/peoplemove/global-remittance-flows-2021-year-recovery-and-surprises
[11] https://www.juniperresearch.com/press/blockchain-deployments-save-banks-27bn-by-2030
[12] https://www.federalreserve.gov/econres/ifdp/files/ifdp1334.pdf
[13] https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu202207_2~836f682ed7.en.html
[14] https://www.bis.org/publ/qtrpdf/r_qt2003i.pdf

3. Zooming in on IoT and M2M payments

3.1 Differentiating between IoT vs. M2M payments

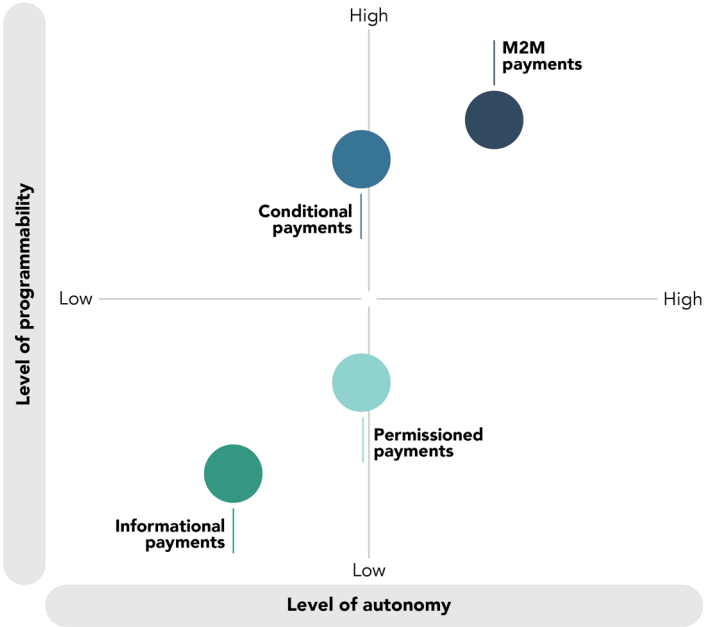
The Internet of Things (IoT) refers to the network of devices or items that are embedded with software and other related technologies (e.g., sensors) for the purpose of sending and receiving data to other devices over the internet. At the end of 2021, estimates show that there were 11.3 billion active IoT devices globally, and it is expected that this number will reach 30 billion in 2030.[15] The emerging IoT trend is impacting all stages of industry and will become relevant for most other sectors in the near term. Reports suggest that the potential economic value that the IoT could unlock will be between USD 5.5 trillion and USD 12.6 trillion in value globally.[16]

Many IoT devices can execute payments, turning this sector into one of the most promising – in growth terms – in the payments landscape. IoT payments are transactions triggered by IoT devices with a limited degree of autonomy, i.e., they may require zero or low human interaction. Based on the level of programmability and the level of autonomy, IoT payments can generally be classified into four categories:

i) Informational payments, where a device has permission to access a user's bank account to provide information,
ii) Permissioned payments, where a device requests the explicit consent of the user before executing a payment,
iii) Conditional payments, where a payment is executed based on different pre-programmed conditions put in place by a human, and
iv) M2M payments, where payments are executed based on adaptive, context-aware, behavior-based algorithms in an autonomous way[17] (see Figure 3).

Figure 3. IoT payments spectrum

Source: This visual has been adapted from a Worldline report "The future of autonomous and invisible transactions."



[15] https://transformainsights.com/news/global-iot-connections-294
[16] https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/iot-value-set-to-accelerate-through-2030-where-and-how-to-capture-it
[17] https://worldline.com/en/home/main-navigation/resources/resources-hub/publications/the-iot-payment-revolution.html

Machine-to-machine (M2M) payments are instant and automated payments made between connected devices where no human intervention or confirmation is needed. Those devices can be digital wallets, autonomous vehicles, smart gadgets, etc. Since no human being is involved, they are also known as "invisible payments". Such payments have the potential to impact every sector of the economy and significantly change the current payments landscape. The amount of data that billions of connected devices generate can also be used by ecosystem actors to extract valuable insights to enhance their businesses.

M2M payments fall within the category of IoT payments. While all M2M payments are IoT payments, not all IoT payments are M2M payments (see Figure 3). Moreover, some IoT payments can be initiated by interaction with the end customer, unlike M2M payments.

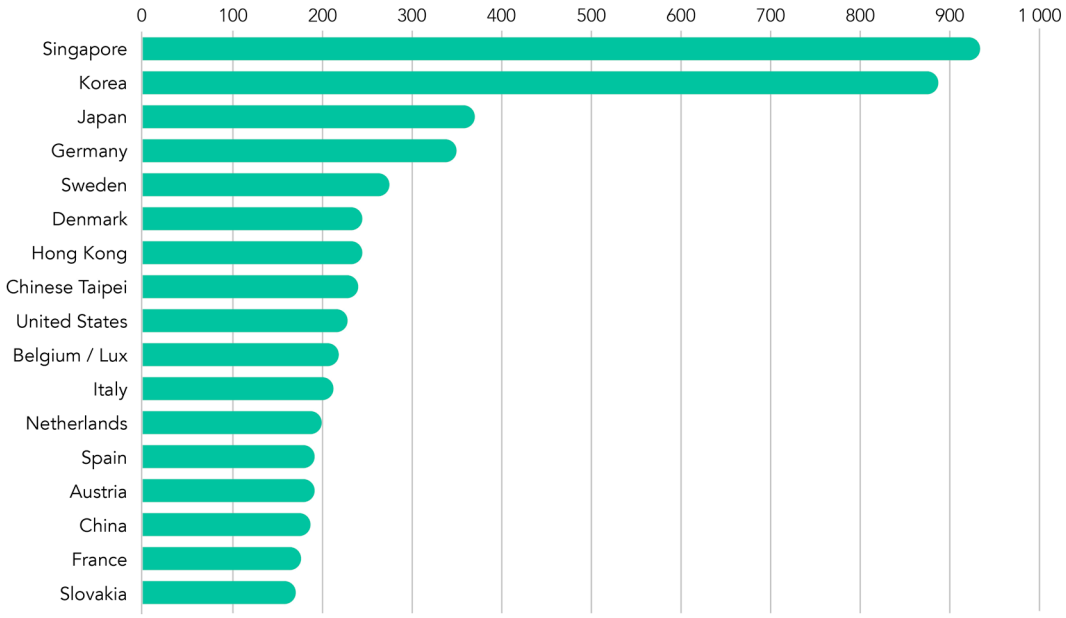
3.2 The European M2M economy is on the verge of a breakthrough

The fourth industrial revolution coupled with the worldwide adoption of digital payments after the first wave of the pandemic - with 780 billion transactions conducted digitally in 2020 – has spurred massive growth in connected devices. Recent global estimates highlight that the number of connected devices has tripled in five years from approximately 10 billion in 2015 to 38.5 billion in 2020.[18] Cellular M2M connections reached 1.3 billion in 2022 representing a 220% increase from an estimated 400 million in 2017.[19] The potential of M2M payments in Europe can also be measured in the robotics industry. In 2020, the average robot density[20] in the manufacturing industry hit a new global record of 113 units. In total, it is expected that the IoT payments industry will reach around USD 27.62 billion in 2023.[21]

By region, Western Europe (225 units per 10,000 employees) and the Nordic European countries (204 units) have the most automated production, followed by North America (153 units) and Southeast Asia (119 units).[22] Singapore and Korea lead the classification, followed by Japan, Germany, Sweden, and Denmark (see Figure 4).

Figure 4. Robot installed per 10 000 employees (2019)

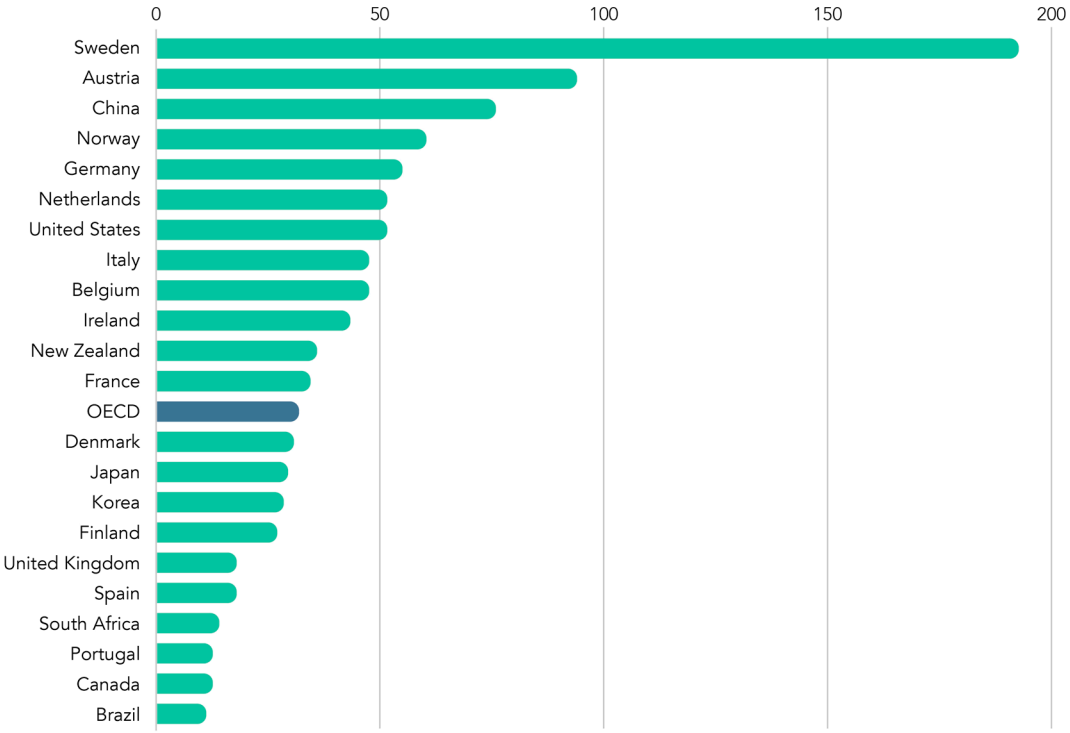
Source: International Federation of Robotics



[18] https://worldline.com/en/home/main-navigation/resources/resources-hub/publications/the-iot-payment-revolution.html
[19] https://www.juniperresearch.com/press/cellular-m2m-connections-reach-1-3-billion-2022
[20] Measure of the number of robots per 10,000 workers in an industry.
[21] https://intellias.com/iot-payments-what-s-ahead-for-contextual-commerce/
[22] https://ifr.org/ifr-press-releases/news/robot-race-the-worlds-top-10-automated-countries

Figure 5. M2M SIM cards per 100 inhabitants (2021)

Source: OECD 'Going Digital' toolkit



Note:
For illustration purposes, only the main European economies have been included. Latest available data for China, South Africa and Brazil is 2019.

In terms of M2M penetration, represented by the number of M2M Subscriber Identity Module (SIM) cards on mobile networks per 100 inhabitants,[23] many European countries lead, however other markets (China and US) are in close contention (Figure 5).

European nations are well-positioned to lead the M2M payments revolution. As per the latest data, in 2020, Germany had the largest robotics market in Europe, with 38% of Europe's industrial robots operating in factories.[24] However, Europe is facing steep competition in this space. US companies lead in the e-commerce, home automation, and payment platforms spaces (e.g., Amazon, Apple, Google), while Korea, Japan,[25] and China have already experimented with IoT payments in the electronics, appliances, and metal and machinery industries. European countries should seize opportunities stemming from the growth in the machine economy to preserve its leadership and strategic autonomy in robotics and avoiding falling behind other regions significantly.

3.3 Stablecoins can drive a competitive edge for the European M2M landscape

The utilization of more sophisticated AI and learning models, new technologies such as 4G/LTE and Bluetooth Smart/Blue Low Energy, robust telecom infrastructure (5G), and more granular blockchain-based applications will allow a whole suite of not only M2M payments but also IoT payments, to flourish in Europe. These payments can be supported using digital wallets without any need of human confirmation, with the use of programmable money a core requirement for settling transactions between self-attesting machines.

[23] The indicator reflects SIM cards assigned for use in machines and devices (e.g. cars, smart meters, consumer electronics) and that are not part of a consumer subscription.
[24] https://ifr.org/ifr-press-releases/news/robot-race-the-worlds-top-10-automated-countries
[25] Japan is the world's predominant robot manufacturing country (see https://ifr.org/ifr-press-releases/news/robot-race-the-worlds-top-10-automated-countries).

Indeed, machine-initiated payments are likely to become increasingly relevant and a well-regulated EUR-based stablecoin or a future digital euro could play a key role in enabling them. In contrast, it is unlikely that a digital euro will penetrate this space in the near- to medium-term. The European Central Bank (ECB) will make its decision on whether to issue a digital euro in Q3 2023 at the earliest, and if it decides to move forward, it is not likely to go live any earlier than 2026 (see Figure 6).[26]

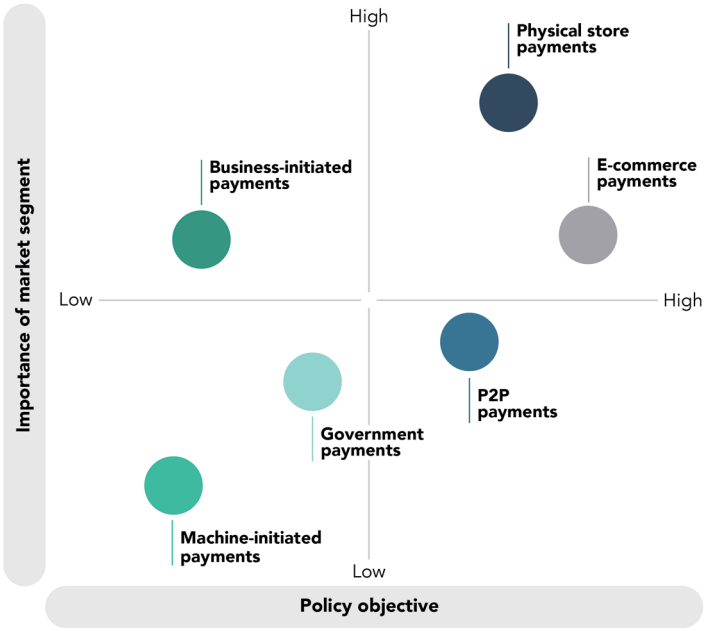
Figure 6. M2M not a priority for the digital euro in the medium-term: opportunity for EUR-based stablecoins

Source: ECB, 2022

ECB communication has also suggested that machine-initiated payments will not be a priority use case for a digital euro at the outset (see Figure 7), creating a gap that EUR-based stablecoins could fill.[27]

Figure 7. Digital euro prioritization of use cases

Source: ECB, 2022



[26] https://www.centralbanking.com/central-banks/financial-market-infrastructure/7947766/digital-euro-could-be-reality-by-2026-ecbs-panetta
[27] https://www.ecb.europa.eu/paym/digital_euro/investigation/governance/shared/files/ecb.degov220504_usecase.en.pdf

4. Assessing current and future use cases for stablecoin-enabled M2M payments

Explosive growth in IoT payments is a scenario that could create significant changes in the current payments landscape. However, as pointed out in section 3, there are varying degrees of autonomy and programmability in IoT payments. While informational payments, permissioned payments, and conditional payments have become more relevant over the last few years, fully autonomous payments, i.e., M2M payments may take a few years to take off.

4.1 Benefits and drawbacks of M2M payments

Machine-initiated payments offer several advantages over conventional payments. First, they are instant and automatic, initiated directly by a machine that will pay for a good or service once it is needed (i.e., as specified in the smart contract). Second, they are contactless, and thus no cognitive load or human interaction is required to execute a payment. Third, they are cost-effective, allowing for the execution of small tasks along the value chain efficiently and reliably.

One of the current drawbacks of M2M payments is the fact that working without human contact leaves them more exposed to possible security threats like data breaches, hacking, or even unauthorized monitoring. A cyber-attack could disrupt and trigger a chain of failures along a supply chain. These risks could be reduced if each machine had its own digital wallet with a cap on spending, for example, and/or some form of human or automated monitoring to detect suspicious activity.

Depending on how they are enabled, achieving scalability could be another significant challenge. With the introduction of micropayments, millions of micro transactions will be executed in seconds, resulting in challenges processing, and settling payments due to their sheer volume. Restrictions such as loss of device communication or disconnection from the communication environment may occur from time to time. By utilizing distributed ledger technology (DLT) to record transactions in a decentralized manner and underpinned by cryptography, the security of the transaction history can be maintained. Additionally, the cost of fees associated with processing transactions on DLT networks may also present challenges.

4.2 Industry use cases

An assessment of the current IoT landscape suggests that M2M payments are likely to develop in a variety of industries.[28] The automotive industry is one the most prominent ones. A connected vehicle could pay for gasoline directly when it has finished refueling, or it could pay for parking or a highway toll. Similarly, a shipping container could initiate a payment for its own transport. To enable these payments, each machine may be linked to an unhosted wallet[29] from which it may execute the transaction. Such use cases will heavily benefit the transportation industry, freeing drivers from having to make payments, increasing efficiency in the logistic chains, and avoiding possible human errors by circumventing human authentication each time a truck, van, or car needs to make a payment. Some companies have already started to work on similar projects in this space. One of the major German banks, Commerzbank, in a joint project with Daimler Truck AG has developed a blockchain-based payment solution for M2M payments. The idea was to automate the payment process of electronic charging between the truck and the electric station. Commerzbank used a DLT to enable payments with euros – cash on ledger - issued on the blockchain.[30]

The smart home sector is another example of where IoT payments, including M2M, could thrive. A smart home could administer and pay for the energy it consumes. Industrial machines could

[28] The MXC Foundation also tested and released a M2M payment mechanism with the aim of creating an autonomous blockchain that will record payments between wireless devices (see https://fintecbuzz.com/super-fast-m2m-payments-are-finally-a-blockchain-reality/).
[29] An unhosted wallet, also known as cold storage wallet or self-custody wallet, is an instrument that allows the crypto user to maintain her crypto balance outside of an exchange.
[30] https://www.commerzbank.com/en/hauptnavigation/presse/pressemitteilungen/archiv1/2019/quartal_19_03/presse_archiv_detail_19_03_82762.html

directly pay a 3D printer to print replacement parts; smart printers could order more ink and pay for the order when its ink levels are low. Since the decision to place the order and make the payment are all automated, it is an IoT payment. They also have promising applications in cloud services. For instance, a computer could pay for online data storage based on the storage it utilizes at different moments in time.

Experimentation with "pay-per-use" transactions is taking off

Within IoT payments, there is huge demand for machine-to-user payments, usually based on pay-per-use models. The idea behind this concept is leasing a machine to a consumer or company and charging for its use based on a set of predefined criteria. It has been possible to enable machine-to-user payments across all types of machines and their output. Instead of directly paying the machine, it can be invoiced to the user based on the output that the machine produces on a daily, weekly, or monthly basis. There are already examples of companies that are employing pay-per-use business models. One example is CashOnLedger, that in a partnership with the Lindner Group, has leased tractors to its clients on a pay-per-use basis.[31] In Tokyo, JCB, in a joint project with Keychain, has begun to develop a prototype to make IoT payments. Their idea is to develop a solution that links the device identity to the owner's identity (a human) and to build an infrastructure (blockchain) to perform M2M transactions that can record transaction history.[32]

4.3 The potential benefits of stablecoin-enabled IoT and M2M payments are compelling

Programmability of payments can be enabled either through an API layer on top of an existing payment infrastructure or through smart contracts via a blockchain or distributed ledger. Both have their advantages and drawbacks. The main advantage of enabling programmability via APIs is that they can be layered on top of existing payment systems, such as the ECB's Target Instant Payment System (TIPS) or EBA Clearing's RT1. In addition to their flexibility, APIs tend to have a similar design that is familiar to most system developers, making them much more practical to use. However, there exists the potential decoupling of the programmability from the digital representation of money if a discrete API gateway were the sole interface for interacting with that money. Second, there is the increasing potential for system failure if numerous critical APIs are layered atop one another.[33] Moreover, leveraging instant payment systems such as TIPS and RT1 would not allow for instant settlement, as these systems settle on a deferred net basis.

However, it is currently not possible to enable micro payments for IoT transactions without smart contract programmability and composability. Therefore, leveraging DLT technology in this context is being heavily explored.[34] Programmability could be carried out through a blockchain-based stablecoin that enables peer-to-peer transfers settled instantly through smart contracts and without the need for an intermediary to facilitate settlement or act as a trusted entity among the contracting parties. EUR-based stablecoin transfers could also be sent "off-chain" through a trusted intermediary. [35]

In terms of the potential benefits over API-enabled programmability, DLT technology could be more efficient and faster than APIs for machine verification purposes - especially in the IoT context where millions of machines will need to be identified in a short period of time. According to some sources, the potential for system failure is higher for APIs than DLT if several APIs are layered atop one another.[36] Moreover, the use of blockchain technology for smart contracts may better deter cyber threats since the blockchain is underpinned by cryptography.[37]

[31] https://cash-on-ledger.com/fully-automatic/
[32] https://prtimes.jp/main/html/rd/p/000000488.000011361.html
[33] https://www.federalreserve.gov/econres/notes/feds-notes/what-is-programmable-money-20210623.html
[34] Composability is the ability of parts of a system to be used to create bigger structures and for the output of one to be the input of another.
[35] Off-chain transactions are those transactions conducted outside the blockchain network.
[36] https://www.federalreserve.gov/econres/notes/feds-notes/what-is-programmable-money-20210623.html
[37] https://att.aptisi.or.id/index.php/att/article/view/97

5. Further guidance from regulators is needed to spur M2M payment growth

It is important that regulators foster growth in IoT and M2M payments, as it is key to maintaining the global competitiveness of the European digital economy. And while there is great potential for the integration of stablecoins in IoT and M2M payments to drive a new wave of growth in the European digital economy, there are various policy questions and regulatory issues that must be overcome before this can be realized. Some of these issues are detailed below.

- **Lack of a machine identity framework**
  For machines to make and receive payments in a safe and secure manner, it is imperative to establish standards around machine identity (e.g., digital certificate, key, credential) which could be used for authentication within the payment process. In support of such a framework, the creation of a machine identity management system ("know-your-machine") is first required. This could take the form of a centralized database of machines authorized to make partially or fully autonomous payments. Such a database is something an independent agency or regulatory authority could take the lead in establishing.

- **Gaps in existing regulation (e.g., PSD2, GDPR)**
  At present, regulation of M2M payments is not fully within the scope of the existing digital payments and data privacy regulatory frameworks. For example, payment services providers (PSPs) must comply with Strong Customer Authentication (SCA) whether the payer is a natural person (individual) or a legal entity (e.g., company). But how could SCA be applied in an M2M context? Similarly, it is unclear how some aspects of General Data Privacy Regulation (GDPR) compliance could be achieved. While decisions taken by machines are currently subject to GDPR, machine-automated decision making can only take place in certain situations (e.g., when a human has provided explicit consent, a contract is performed or when it is authorized by law).[38] Therefore, how regulators plan to approach GDPR compliance issues in an M2M context is still unclear.

- **Lack of guidance around unhosted wallets**
  Although the MiCA regulation framework will provide regulatory clarity around the issuance of stablecoins in the EU, there are still some aspects of regulating crypto assets and stablecoins that have yet to be addressed within the draft legislation. This includes the treatment of unhosted wallets, which are extremely important in enabling M2M payments. Thus far, the Council of the European Union and the European Parliament have reached a provisional agreement on the Transfer of Funds Regulation with the aim of extending the "travel-rule" to the crypto sphere.[39] Specifically, if an individual or firm receives or sends more than EUR 1,000 from an unhosted wallet, the crypto-service provider will be required to verify whether the wallet is effectively owned or controlled by the related customer. However, further clarity from regulators may still be needed.

- **Lack of common standards to enable stablecoin interoperability**
  Regulators should also be aware of market fragmentation issues that could arise due to a lack of interoperability between EUR-based stablecoins (e.g., numerous firm-level stablecoins). Such issues could directly impact usage of stablecoins for M2M and other payments types. For example, EUR-based stablecoins for M2M payments could be issued on different types of blockchains or distributed ledgers (e.g., permissionless, permissioned, hybrid or even consortiums). European regulators and policymakers should therefore encourage the adoption of common industry or EU-level standards, drawing on existing best practices and international standards (e.g., ISO TC/307, which is the technical committee responsible for creating and maintaining standards related to blockchain and DLT within the International Organization for Standardization (ISO). Moreover, common operational and business standards should be developed not only to facilitate interoperability between different EUR-based stablecoins but also their possible integration with Enterprise Resource Planning (ERP) platforms and systems.

[38] https://www.linklaters.com/en/insights/blogs/digilinks/ai-and-the-gdpr-regulating-the-minds-of-machines
[39] https://cryptonews.com/news/eu-institutions-reach-provision-agreement-controversial-unhosted-wallets-regulation.htm

6. Conclusion

The European economy is on the verge of a breakthrough in M2M payments. The potential number of use cases is significant, with many industries already experimenting with technical feasibility studies and Proof-of-Concepts using theoretical stablecoins. And with a digital euro not likely to be issued until late 2026 at the earliest, an alternative instrument is needed for growth in the M2M space to truly develop. EUR-based stablecoins could play an important role in this regard.

It is important that regulators foster the development of IoT and M2M payments, as it is key to maintaining the global competitiveness of the European digital and machine economies. There is great potential for Europe to lead in this space despite fierce competition from other markets (e.g., China, Japan, U.S.). However, this will only be possible with clear and timely guidance from regulators to adapt the existing regulatory framework.

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About Lipis Advisors

Lipis Advisors is a leading strategy consultancy specializing in the payment sector. Lipis Advisors staff are experts on payment systems, services, and strategy, as well as the underlying technologies that support payment infrastructures. Lipis Advisors advises on all forms of payments, including ACH payments, real-time payments, card payments, cheques, mobile payments, online payments, and RTGS/wire payments.

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The Digital Euro Association (DEA) is a think tank specializing in central bank digital currencies (CBDCs), stablecoins, crypto assets, and other forms of digital money based in Frankfurt, Germany. In particular, it focuses on the digital euro. The DEA is committed to independence in aggregating and amplifying the views of society and the furtherance of the public good through knowledge exchange, encouraging new ideas, and forward-thinking in the field of digital money. The DEA is the independent voice of citizens regarding digital money-related topics. Partnerships and collaborations are in no way an endorsement of Member ideologies, products and services, nor political regimes.

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