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From Bitcoin to Stablecoins and their Contribution to the Monetary Landscape: The Case of Lugano's Plan ₿

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Summary

The present contribution explores – for the first time in economic literature – the monetary experiment called Lugano's Plan ₿ and conducted by the City of Lugano (Switzerland) since March 2022 consisting of a public-private partnership with a global player in the stablecoin market such as Tether. In addition to stimulating a vivacious public debate about payment methods and fostering educational initiatives, the City of Lugano has created LVGA, a local payment token based on blockchain technology, which represents *de facto* a stablecoin pegged to the Swiss franc. The present case study provides further insights into the local experience of Lugano and might represent an example of "best practices" to be further explored by the economic literature in the future.

Zusammenfassung

Der vorliegende Beitrag untersucht – zum ersten Mal in der Wirtschaftsliteratur – das monetäre Experiment namens Lugano's Plan ₿, das die Stadt Lugano (Schweiz) seit März 2022 durchführt und das aus einer öffentlich-privaten Partnerschaft mit einem Global Player wie Tether auf dem Stablecoinmarkt besteht. Neben der Anregung einer lebhaften öffentlichen Debatte über Zahlungsmethoden und der Förderung von Bildungsinitiativen hat die Stadt Lugano auch LVGA, nämlich einen lokalen Zahlungstoken auf Grundlage der Blockchain-Technologie, geschaffen, der *de facto e*inen an den Schweizer Franken gekoppelten Stablecoin darstellt. Die vorliegende Fallstudie bietet weitere Einblicke in die lokale Erfahrung von Lugano und könnte ein Beispiel für „Best Practices" repräsentieren, die von der Wirtschaftsliteratur in Zukunft weiter untersucht werden könnten.

JEL classification: E41, E42, E59

Keywords: complementary currencies, cryptocurrencies, Lugano's Plan ₿, public-private partnership, stablecoins, Tether

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1. Introduction

There is no doubt that cryptocurrencies have significantly changed the monetary landscape since Bitcoin's introduction in 2009 as a consequence of the distrust in the traditional banking and financial system due to the global economic and financial crisis (Mbalaka 2023; Petti and Sergio 2024).

Admittedly, this has not been an evident nor a predictable outcome after the constitution of central banks in the 18th and 19th Century, which contributed to restrain bottom-up movements to avoid losing their laboriously achieved economic power (Prieto 2021). Only during times of profound economic crises or wars, alternative means of payments (especially, if circulating at the regional level) have been tolerated (Von dem Berge 2014). In that limited monetary sense, cryptocurrencies might not seem "really" new. They nevertheless are because of the underlying technology, which has made them for several years a black box for most policymakers as well as potentially interested investors (World Economic Forum 2018).

The literature has often highlighted cryptocurrencies' speculative nature but it also has addressed their potential especially in developing countries where citizens have difficulty to access the traditional banking and financial system (Bharat et al. 2023; Vasudeva 2023). While there is still a certain degree of uncertainty surrounding the cryptomarket due to its high volatility and absence of lenders of last resort, interest of people is still soaring and has progressively led central bankers and policymakers to think of potential ways to include specific crypto-solutions into the traditional banking and financial landscape (Boykov and Suladze 2024).

Among the notable examples for a potentially increasing openness to specific typologies of cryptocurrencies, it has to be mentioned how the Chairman of the Governing Board of the Swiss National Bank Thomas Jordan has demonstrated a moderate interest in stablecoins. In fact, they are "designed in such a way that they can potentially assume the characteristics of good money – for instance if they are pegged to stable, official currencies" (Jordan 2019, p. 3). While these are not systematic examples, there is certainly a growing acceptance of the bottom-up request for new, alternative financial solutions. Given the growing interest of society in cryptocurrencies, it seems progressively fundamental to also discuss the topic at a higher, public level to reduce situations of opacity or absence of regulation. The example of the City of Lugano in the southernmost Canton of Switzerland (Ticino) representing the third most relevant financial centre in Switzerland (Swiss Confederation 2024) – is in this specific regard – particularly interesting. Starting from March 3, 2022 the City of Lugano and Tether Operations Limited (issuing the worldwide most used stablecoin (Tether 2024)) signed a Memorandum of Understanding to establish "a strategic collaboration on specific initiatives […] to strengthen the international positioning of

Lugano as a main Swiss and European hub for digital innovation with a focus on blockchain technology through concrete projects and solutions" (Lugano's Plan ₿ 2022). The ultimate goal consists also in raising awareness about cryptocurrencies and stimulating the public debate (Albisetti et al. 2023).

While this could be seen as an attempt to revamp the local financial centre after the Swiss banking secrecy has been reshaped in 2017 by means of the adoption of the automatic exchange of information on financial accounts (State Secretariat for International Finance – SIF 2024), the scope is perhaps much broader and involves also a not necessarily financially competent audience. If Bitcoin and cryptocurrencies in general are the epitome of bottom-up technological advance, the example of the City of Lugano is likely to represent a replicable public approach to involve the population into critical debates.

2. The case of Lugano's Plan ₿

The Lugano's Plan ₿ initiative has been designed to integrate Bitcoin and stablecoins such as LVGA and USDT, respectively tied to the Swiss franc and the US dollar, into the municipal framework. By doing so, local policymakers have been inspired by recent implementation examples such as that of El Salvador, which has introduced Bitcoin as a legal tender since 2021 (Gobierno de El Salvador 2021).

2.1 Creation of a Swiss Franc-Pegged Stablecoin through a Proof of Authority (PoA) Blockchain

Interestingly, the Lugano's Plan ₿ initiative was the natural follow-up to an earlier, pioneering initiative of the city: the creation of the app MyLugano, of the LVGA tokens and of the 3Achain blockchain. These threefold initiatives in Lugano began with a seemingly conventional approach, namely with a Swiss franc-based cashback program designed to stimulate local trade after the economic disruptions caused by Covid-19-related lockdowns. From the outset, the municipal administration (with the support of local development companies and Universities) created a Proof of Authority (PoA) blockchain called 3Achain (2024). Founding precisely on this advanced technological infrastructure, LVGA, namely a local stablecoin pegged to the Swiss franc, was developed. Moreover, "[b]y utilizing the 'Proof of Authority' consensus protocol, involving validators selected for authority and reputation, the energy consumption required to validate transactions is drastically reduced, distinguishing it from traditional 'Proof of Work' protocols" (MyLugano 2024b). This consensus model corresponds to the standard for centralized systems and is actually the "natural choice" for a system aiming at managing a de-facto permissioned asset such as a local stablecoin,

which precisely depends for its issuance criteria (i. e., cashback for local in-person purchases) and its nominal value (i. e., peg to the Swiss franc) on a fixed set of known centralized institutions. Economic literature so far mostly focussed on two other consensus protocols, namely the Proof of Work (PoW) underpinning Bitcoin and the Proof of Stake (PoS) employed by some Bitcoin-derived "altcoins" (Seang and Torre 2021). The former, while representing the only known option for a completely permissionless and decentralized system like Bitcoin, poses several technical challenges and requires a potentially significant energy consumption, both of which could be easily seen as overkill for partially permissioned and centralized applications[1]. The latter, often presented as an equally valid alternative for decentralized systems, has actually been criticized for its circular security model (where "voting rights" on the correct transaction chronology depend on "slashable stakes" which in turn rely on a specific transaction chronology where such stakes have been correctly deposited) since the very first time they have been proposed in the second "b-money" design (Dai 1998). This criticism has been finally clarified and proved only more recently (Poelstra 2015), which in turn consolidates the practice among "altcoins" of using this consensus algorithm only in conjunction with centralization points (from developer-issued checkpoints to the form of social coordination known as "weak subjectivity").

LVGA was conceived from the beginning as a local digital currency with a dual purpose: to serve as a cashback system and to stimulate the local economy. In this specific regard, Groppa (2013, p. 56) finds that "[c]omplementary currencies may be a useful tool for local development, in so far as they generate an augment of the demand multiplier". Because of the ability to increase the money supply on the one hand and to still keep the money multiplier in the economy stable on the other, complementary currencies have according to Gelleri and Stodder (2021) a countercyclical effect at the local level in times of crisis. Moreover, Belmonte et al. (2022) claim that a complementary currency "backed by a CBDC can not only compensate for the demise of commercial bank money but can also democratise money creation". While these monetary experiments are not free of potential complications, digitization is a powerful driver to overcome them as further research shows (Edme-Sanjurjo et al. 2020). Furthermore, Lugano's monetary experiment further joins an increasing number of local currencies in Europe as mapped in December 2019 by Seang and Torre (2021). Among those of particular interest given their territorial proximity to Lugano, there is the local digital currency called Léman circulating in the area of the Lake Geneva (France/Switzerland) managed by ComChain (for "blockchain of commons")

[1] Furthermore, a similar degree of "tamper-proof immutability" to the one of Bitcoin's Proof of Work itself can be easily achieved by periodically time-stamping the state of the 3Achain on Bitcoin, via protocols such as OpenTimestamps. This is, in fact, a strategy that the 3AChain stakeholders are currently actively researching.

and "based on ethereum technology, (but without the use of the 'ether' currency)" (Rossiaud 2018). As explained by Monnaie Léman (2024), this "is the complementary, local currency of the cross-border Lake Geneva basin. There is a Lake Geneva backed by the Swiss franc: 1 LEM-CHF = 1 CHF and a Lake Geneva backed by the euro: 1 LEM-EUR = 1 EUR. […] You can pay in banknotes or electronic money, thanks to its Biletujo application". While it is difficult to forecast whether these digital and monetary developments might lead to a further geographical expansion, they certainly represent a testimony to the Swiss innovativeness. Lugano's Plan ₿ is hence likely to be just one step among others equally ambitious.

The LVGA itself can therefore be used exclusively within the circuit of the app MyLugano, thus creating a closed and controlled economic ecosystem that could favor local businesses. The system is also based on an advanced IT-configuration that includes a blockchain, a mobile application, and a support infrastructure managed by the municipality. The "LVGA tokens", whose name derives from the letters depicted in the City's coat of arms, are in all respects a stablecoin with a value equivalent to 1 Swiss franc centime each (MyLugano 2024a). This design choice, which creates a balance between decentralization and control, reflects a pragmatic approach aimed at leveraging the benefits of the blockchain technology while maintaining an adequate level of regulatory oversight, system stability, ease of use, and scalability (Caddy 2011). The implementation of this PoA blockchain and the creation of LVGA represent a significant step towards integrating blockchain technologies into public administration and the local economy. This innovative approach has also allowed Lugano to create an efficient and controlled local digital currency system, laying the groundwork for further developments in the field of cryptocurrencies and blockchain. Moreover, this shift effectively transformed LVGA tokens into a stablecoin pegged to the Swiss franc and created a new local currency system with a digital backbone.

The Lugano's Plan ₿ initiative further evolved after a crucial partnership with prominent players in the Bitcoin ecosystem was signed. Tether (USDT), namely the issuer of the first and most widely used stablecoin which recently became active in other fields such as that of biotech and artificial intelligence (AI) (Tether 2024), and Fulgure Ventures, namely an investment firm focused on blockchain technology (Fulgur Ventures 2024), provided crucial technical support. For instance, Tether's expertise contributed to build the technological infrastructure for the LVGA expanding it to USDT and Bitcoin itself. Meanwhile, Fulgure Ventures secured funding and attracted investment in Bitcoin-related projects. Conversely, several local businesses were encouraged to adopt Point-of-Sale (PoS) systems capable of processing LVGA, USDT and Bitcoin transactions. The adoption of Bitcoin facilitated by the Lightning Network (i. e., a layer-two scaling solution for Bitcoin allowing for faster and cheaper transactions (Lightning Network 2024)) marked a significant step towards integrating Bit-

coin into daily business by handling high volumes of transactions off-chain while maintaining security on the main Bitcoin blockchain.

While strengthening Lugano's international positioning as a European contributor to digital innovation, raising public awareness about cryptocurrencies and stimulating the local economy were the dominant targets of Lugano's Plan ₿ initiative, local policymakers were also keen to reduce Europe's dependence on Big Techs in payment transactions which already "pose a risk for consumers, fair competition and our democracy" (Melches and Peters 2024, p. 4).

While Switzerland has already reduced this dependency (and, therefore, geopolitical risks linked to it) by creating its own payment app TWINT at the national level with over 5 million active users and more than 590 million transactions processed in 2023 (TWINT 2024), other digital payment methods could also represent a helpful solution at the cantonal or municipal level. Moreover, the use of a stablecoin pegged to the Swiss franc in conjunction with a stablecoin pegged to the US dollar would reduce the currency risk from a devaluation of the US dollar. It's worth mentioning that the Swiss franc historically represents one of the most stable examples of fiat currencies worldwide: the last one to abandon the gold convertibility (May 1, 2000) and among those having never suffered a hyperinflation crisis. For instance, the only relevant capitulation goes back to September 1936 when Switzerland suffered its sole devaluation during the Great Depression. In fact, following the devaluations of the British pound, US dollar and French franc, the Swiss franc was devalued by 30 % reaching to 4.37295 Swiss francs equivalent to 0.20322 grams fine gold or 1 US dollar (World Gold Council 2024). This makes Switzerland and its economy a particularly interesting and resilient economic and monetary environment.

2.2 Statistical Evidence from Lugano's Plan ₿: Results of the Quantitative and Qualitative Analysis

Among the indicators of success for this local monetary experiment, there is the extensive adoption of cryptocurrency payments by over 400 retailers throughout Lugano. The acceptance involves heterogeneous economic sectors (especially: bars and restaurants, cars and motorcycles, electronics, fashion, sports and leisure) and there are currently almost 50,000 app users (of which more than 20,000 with funds in their wallets). Moreover, the current amount of LVGA in circulation is approximately 572,000,000 units corresponding to over half a million Swiss francs (100 LVGA = 1 Swiss franc) and – as of July 2024 – there have been more than 15,000 transactions monthly (MyLugano 2024c). This makes the LVGA one of the most used payment methods in Lugano (21 percent of all users) as indicated in Figure 1, which presents the results of a survey conducted among 740 respondents about their preferred payments meth-

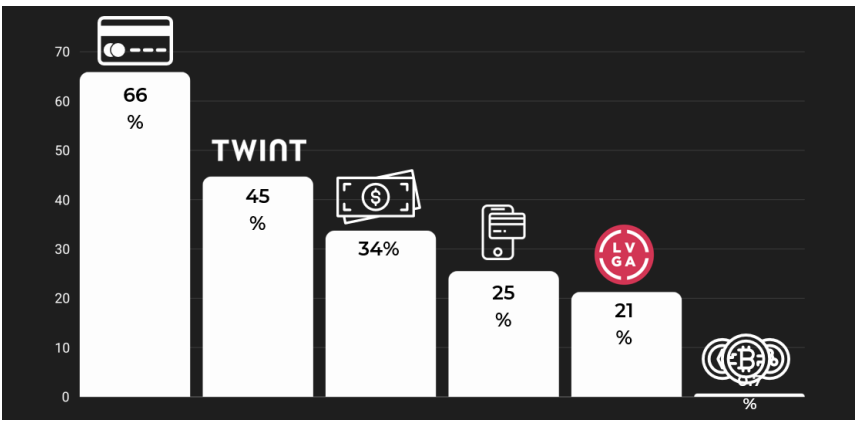

Figure 1: Most used payment methods in Lugano (740 respondents) (in percentage points)

Source: MyLugano (2024c).

ods (respectively, in order of appearance from left to right: credit/debit cards, TWINT (i. e., a Swiss cashless payment system), banknotes and coins, mobile apps, LVGA and Bitcoin). These figures increase to 30 percent of all transactions among under-35 users.

Furthermore, a global sentiment analysis conducted by IBM between November 2021 and February 2023 (Città di Lugano (2023) provides valuable insights into the initiative's online presence, its reputation and overall impact. The study also divided the analysis into a pre-launch period (November 1, 2021 – February 28, 2022) and a post-launch period (March 1, 2022 – February 28, 2023). In this specific regard, the quantitative analysis reveals a striking contrast between the pre- and post-launch periods. Before the launch of the Lugano's Plan ₿ initiative, online mentions were limited and consisted of 82 results on a daily average across social media and online channels. These figures dropped to just 10 daily mentions whenever social media platforms were excluded. Engagement levels were also low and equal to 158,000 interactions. Following the launch, a strong surge in online activity occurred. In fact, the total number of mentions staggeringly increased by 1,365 % (reaching 141,000 mentions) and the daily average soared to 386 mentions. Engagement also skyrocketed and increased by 418 % to 819,000 interactions. A similar increase was observed even when social media channels were excluded, with mentions climbing by 1,604 % and engagement increasing by 52 %. Even the geographic distribution of mentions showcased a post-launch expansion. While Switzerland initially held a prominent position, the initiative's global reach became more extensive, with significant increases in mentions from the United States, Italy, Spain and Turkey. The study

further revealed the dominance of English (124,000 post-launch mentions) and Italian (17,000 post-launch mentions) in online discussions.

The qualitative analysis also delved into the content of online conversations and examined prevalent topics and sentiments. Following the launch, a substantial increase in online discussions surrounding finance and cryptocurrencies became evident. For instance, 62 % of online mentions and conversations related to Lugano pertained to finance when social media was included, which represented an increase of 59,000 posts and shares in the finance and investing category. Even more noteworthy, 72 % of online conversations focused on finance when social media was excluded, which hence represented an increase of 12,000 posts and shares in the finance sector alone.

Sentiment analysis revealed a strongly positive perception of the Lugano's Plan ₿ initiative. A remarkable 92 % of the most frequently recurring keywords displayed a positive post-launch sentiment when social media was included. The term "Plan ₿" itself appeared in both positive and negative contexts, but the overall positive sentiment remained dominant at 96 %. Excluding social media, the positive sentiment reached 90 % across the board, which highlights a consistent focus on blockchain and financial services. Based on this social listening study which is also indirectly confirmed by GoogleTrends (2024) and the number of worldwide online searches of the term "Lugano" from 2004 to 2024 having reached an all-time peak in July 2024, the Lugano's Plan ₿ initiative significantly increased Lugano's international visibility and fostered on average positive sentiment surrounding its experimentation. Another aspect to mention is the mostly neutral or positive stance toward the Lugano's Plan ₿ initiative by cantonal and federal regulators.

2.3 Lugano's Plan ₿ Other Public-Private Initiatives

Apart from economic stimulation alone, the Lugano's Plan ₿ initiative prioritised education. For instance, the creation of summer schools in collaboration with local Universities attracted within three years and editions over 250 students from all over the world (Lugano's Plan ₿ 2023). The aim of such educational offerings was to provide training on Bitcoin and blockchain technology and to contribute to develop related skills and deeper understanding of these transformative technologies. Clearly enough, the summer schools also provided insights into the current monetary landscape and monetary theory in general. Furthermore, significant financial resources were committed to Bitcoin innovation through the Plan B Funds, managed by Fulgure Ventures. Funds managed by Fulgure Ventures also supported the development of Bitcoin-related start-ups and research projects and attracted both established players and emerging innovators to Lugano. The initiative also fostered the Plan ₿ Forum, a conference

series attracting international Bitcoin developers, researchers, entrepreneurs and investors. As a consequence, the influence of Bitcoin-related startups and high-net-worth Bitcoin holders having relocated to Lugano had a substantial impact on the local economy because these economic actors started spending their Bitcoin holdings on goods and services.

In sum, the Lugano's Plan ₿ initiative offers valuable lessons for similar local communities seeking to integrate Bitcoin as well as other cryptocurrencies into their territorial economies. While the initiative has proven to be successful in attracting investments and fostering innovation as well as raising public awareness, it also highlighted challenges. Besides political "headwind" at the municipality and cantonal level (Noi 2022), Bitcoin transaction volumes in Lugano remained relatively low compared to transactions settled in LVGA which might reflect the fact that Bitcoin's primary function is currently (despite its volatility) rather that of a store of value than of a medium of exchange (Rotta and Paraná 2022). While this perception might evolve in the future, visibility and reputational effects have been for now the most significant results in the case of the Lugano's Plan ₿ initiative.

2.4 Research Limitations and Future Perspectives

The present contribution does not intend to provide "hard facts" to be diffusely adoptable by different local communities in different countries. In fact, it explores for the first time in the economic literature the Lugano's Plan ₿ initiative and its unique elements of success such as 1) an innovative public-private partnership, 2) openness of businesses and consumers to technological change involving payment methods and 3) a political and institutional framework enabling it. Furthermore, Lugano is also the third financial hub in Switzerland ranking after Zurich and Geneva (Swiss Confederation 2024). Among the research limitations which equally represent future perspectives of development, there surely are potential changes of legislation at the national level although the Swiss National Bank (2020) seems to tolerate stablecoins and even to be inspired by its stability features (to be transposed to e-cash whenever it would be issued by central banks). The territorially limited space (which has an impact on the number of businesses and consumers as well as on transaction volumes) is also a non-negligible *caveat*.

3. Conclusion

The monetary experiment carried out in Lugano highlights the strong potential for public-private partnerships (PPPs) incentivizing the adoption of Bitcoin and stablecoins but also contributing to the local economy while fostering pub-

lic education centering around innovative technologies. The collaboration between the City of Lugano in combination with its forward-thinking approach and the technical expertise of companies like Tether and Fulgur Venture certainly created a noteworthy environment for innovation. While challenges remain for a wider, more coordinated adoption of Bitcoin, the Lugano's Plan ₿ initiative serves as a compelling example of a local community successfully navigating at the intersection of commerce and finance but also of technology and public involvement in the rapidly changing landscape of Bitcoin and stablecoins. The analysed initiative provides potential lessons for other municipalities and further contributes to the debate about decentralised forms of money.

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