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# Money, FOMO and Zombies - How Europe can stay sane in a world shaken by Libra

Note: this paper reflects the author’s personal opinion and does not necessarily reflect the opinion of his company nor any of the organisations with whom he is affiliated.

Abstract: In Europe a number of banking communities[1] are understandably getting increasingly nervous about Facebook’s Libra and want the ECB to act. Here a comment on the typical responses suggested. This paper discusses in particular the issues surrounding the question whether the best way to provide seamless pan-European/global payments is to deploy a new cryptocurrency infrastructure, perhaps via a private actor, or to build on - and improve - the existing banking infrastructure - and whether the front- or the back-end should actually be the focus.

[1] most recently the German Private Banks’ call for a “Programmable Digital Euro” https://bankenverband.de/newsroom/comments/programmable-digital-euro/ now also being supported by the German Finance Minister Scholz https://www.handelsblatt.com/finanzen/geldpolitik/digitale-waehrung-finanzminister-scholz-fuer-digitalen-euro-ablehnung-der-kryptowaehrung-libra/25081104.html
and also the longer standing debate on Central Bank Digital Currencies (CBDC)

The hype around open Bitcoin/Blockchain/DLT/crypto-currencies has been in steady decline (Gartner: "Blockchain fatigue"[2]) since the last 10 years[3] showed that, despite 1 billion$ of investments[4] and endless POCs, no successful large scale commercial roll-out for any legal use[5] has taken place anywhere[6].

[For geeks: the closed, permissioned "enterprise" Blockchain[7] is still rather in discussion, but there is some debate whether this adds sufficient business value to classical closed permissioned systems (which have been successfully deployed at large scale for decades) to warrant the hype.]

Although some[8] still entertain the hope that "cryptocurrencies have benefits of security, speed, minimal transaction fee", the same do acknowledge that that "they have not managed to take off" – likely due to the observed facts that they are typically neither faster

[2] https://www.gartner.com/en/newsroom/press-releases/2019-05-07-gartner-predicts-90--of-blockchain-based-supply-chain "Gartner predicts 90% of Blockchain-based supply chain initiatives will suffer 'Blockchain Fatigue' by 2023"

[3] 10 years is an eternity in an economy where good new solutions are famously adopted ever more quickly, some in only a year or two. Facebook went public only 7 years ago and has reached billions of users and billions of revenue.

[4] Blockchain investment is predicted by interested parties to rise to 15.9bn$ (of which ca 30% by banks) in 2023 according to https://www.computerworld.com/article/3434067/despite-growth-in-some-industries-blockchains-future-remains-cloudy.html "Why Blockchain, despite some early success, remains a corporate enigma"

[5] Illegal use especially of Bitcoin for fake get-rich-quick schemes, and more seriously for ransomware, money-laundering etc has, of course, taken place at great scale, e.g. the WannaCry attack disabling 200,000 computers in a few hours (including those of governments, public rail, hospitals (e.g. UK NHS), telcos, banks) in 150 countries with economic losses of 4bn$

[6] "the biggest corporate boosters like IBM, NASDAQ, Fidelity, Swift and Walmart have gone long on press but short on actual roll-out", "the most prominent Blockchain company, Ripple, doesn't use blockchain", according to Stinchombe 2018, https://medium.com/@kaistinchcombe/decentralized-and-trustless-crypto-paradise-is-actually-a-medieval-hellhole-c1ca122efdec

[7] note that there is no common agreement what actually defines a Blockchain or DLT, let alone sub-classes such as "open" or "enterprise" BCs. However, an enterprise BC is largely understood to mean a closed system where the actors are known and registered. A classical distributed database protects against crash/data loss, whereas an enterprise BC protects somewhat against malicious misuse at the technical level.

[8] .e.g Deutsche Bank "Cryptocurrencies: the 21st Century cash" in Imagine 2030 konzept, pp58-60 https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD0000000000503196/Imagine_2030.pdf touted wrongly as "Deutsche Bank predicts cryptocurrency could replace fiat by 2030" in https://www.finextra.com/newsarticle/34920/deutsche-bank-predicts-cryptocurrency-could-replace-fiat-by-2030

nor cheaper nor safer[9] when implemented in the real world. It thus seems increasingly likely that not the loud market criers, but the quiet academics[10] were right all along:

> "Each purported use case — from payments to legal documents, from escrow to voting systems—amounts to a set of contortions to add a distributed, encrypted, anonymous ledger where none was needed. What if there isn't actually any use for a distributed ledger at all?"
> [Prof. Ross Anderson, Computer Science, Cambridge University, May 2018]

This puts one in mind of the nobel-prize winning economist Paul Krugman's comment on Zombie economics[11]:

> "Zombies are ideas that should be dead because the evidence has shown them to be false – but they just keep shambling along, eating peoples' brains, because there are people with an interest in keeping them alive"

The recent announcement of Libra[12] – despite immediate backlashes[13] by governments, regulators and critical thinkers – has unleashed a new flurry of FOMO-based reactions: if we don't act, Facebook will take over; the Chinese are acting, therefore we must counter; private crypto-currencies are a threat to banks, so banks must issue them too, etc.

So, let us look coolly at the evidence:

- What gap is Libra addressing (maybe solving), that has been left open by existing/payment networks ?
- What is the motivation for the Chinese government to push digital money ?
- How is a digital Euro (new crypto-currency) better than just moving a Euro digitally between PSPs, especially banks (as we have done for decades) ?
- What are the real threats to PSPs/banks in Europe?

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[9] "three successive top bitcoin exchanges have been hacked, another is accused of insider trading, the demonstration-project DAO smart contract got drained, crypto price swings are ten times those of the world's most mismanaged currencies, and bitcoin, the "killer app" of crypto transparency, is almost certainly artificially propped up by fake transactions involving billions of literally imaginary dollars" according to Stinchombe 2018 (see earlier footnote)

[10] „Bitcoin Redux", https://weis2018.econinfosec.org/wp-content/uploads/sites/5/2018/05/WEIS_2018_paper_38.pdf, May 2018

[11] Arguing With Zombies: Economics, Politics, and the Fight for a Better Future, by Paul Krugman, W. W. Norton & Company, January 2020, ISBN 978-1324005018

[12] the reader is assumed to be familiar with Libra: it is the latest attempt by Facebook to behave like a state – it already has a "population" the size of India and China combined, and now it is attempting to issue a currency

[13] for example the Joint Statement by the European Council and Commission https://www.consilium.europa.eu/en/press/press-releases/2019/12/05/joint-statement-by-the-council-and-the-commission-on-stablecoins/, rightly stating a long list of concerns: "these [stablecoin] arrangements pose multifaceted challenges and risks related for example to consumer protection, privacy, taxation, cyber security and operational resilience, money laundering, terrorism financing, market integrity, governance and legal certainty. When a 'stablecoin' initiative has the potential to reach a global scale, these concerns are likely to be amplified and new potential risks to monetary sovereignty, monetary policy, the safety and efficiency of payment systems, financial stability, and fair competition can arise" and state clearly that "no global 'stablecoin' arrangement should begin operation in the European Union until the legal, regulatory and oversight challenges and risks have been adequately identified and addressed."

- Are smart contracts really smart and really contracts ? (debunked in appendix)
- How does the above evidence stack up against the some proposals, e.g. for a programmable digital Euro

Facebook's Libra

Libra[14] addresses the problem of a lack of unified global, low cost, low friction means of paying. Sending money between people across the globe as easily as sending a WhatsApp is currently not possible. In an increasingly digital, globalized, friction-free world it would clearly be desirable to have this.

However, in *Europe* we do have cross-border, low cost, low friction means of paying. Across the Euro-zone (19 member states) we have one currency, one way of addressing (IBAN), one way of sending (SEPA), increasingly instant ($SCT^{inst}$, TIPS), always on (365*24) and typically for free to the consumer. The European payment infrastructure is hugely efficient, has been tuned for decades and leads the world. Over 90bn Transactions are executed flawlessly, with no double spending[15], every year at costs of fractions of cents[16].

The problem thus is clearly elsewhere.

The problem is firstly cross-border payment *outside* the Euro-zone: there are 180 currencies in the world, inefficient correspondent banking networks, 98 ACH systems[17], over 200

[14] Actually, Libra consist of several parts:
- Libra Association – non-profit membership association which also aims to "promote an open identity standard"
- Libra Reserve – the reserve for achieving value preservation
- Libra Blockchain – the infrastructure
- Libra Coin – the payment asset
- Novi (formally called Calibra) – the payment wallet

[15] the big „problem" of double spending now "solved" by Blockchain was actually solved in the 1980s for distributed systems "The Byzantine Generals Problem": an arbitrary number of generals, communicating via messengers (some of whom may be unreliable), can reach agreement/consensus reliably https://dl.acm.org/doi/10.1145/357172.357176. However, this applies only when the generals are known. In the case where, for example, one general decides to spawn a host of clones to influence the decision, it is only with Blockchain that reliable consensus can now be reached. This is not the case for bank-based payment.

[16] e.g. TIPS at €0.002 per payment
https://www.ecb.europa.eu/paym/intro/news/html/ecb.mipnews180806.en.html

[17] ACH numbers according to the World Bank "Global Payment Systems Survey (GPSS)" http://pubdocs.worldbank.org/pubdocs/publicdoc/2016/2/860781456436620612/GPSS2012-Section-III-Retail-Payments.xlsx sadly the number of ACHs has even increased from the previous survey. Much needs to be done in the consolidation of such infrastructures – even in Europe.

clearing systems, many intermediaries, ancient batch-based store & forward networks with cut-off times, expensive remittance services[18], complex forms/procedures[19] and more.

So, Libra does not solve a problem *within* Europe – thus **introducing a "digital Euro" solves no problem at all**. The only possible new need is for a "digital *Global*"[20].
Thus, the right authority to call upon for action is not the ECB but the IMF[21].

We will not enter here into the very significant problems in creating a global currency (replacing all worldwide currencies with one single currency[22], having a private currency owned by Mr Zuckerberg and his business friends rather than by sovereign nation states, etc) as these have been discussed at length elsewhere.

[18] to transfer 1000€ outside the Euro-zone costs 17.52-30.37€ via banks or 39.33/62.54€ via Moneygram/Western Union according to https://www.faz.net/aktuell/finanzen/kosten-fuer-auslandsueberweisungen-steigen-deutlich-16002777.html – using Transferwise "only" costs 7.61€. According to Le Monde 25.4.20 the average cost of sending 200$ in the world has risen to 6.8% (despite a UN target of 3%), with some areas significantly above (e.g. sub-Saharan Africa at 9%). Indeed as a general rule "the poorer you are, the more expensive it is" to send money.

[19] not only to consumers but, surprisingly, over half of all business-to-business (B2B) payments in the US are made by paper cheques, see https://medium.com/wharton-fintech/why-checks-still-exist-and-the-state-of-b2b-payments-b41f3cddea9c "Why checks still exist and the state of B2B payments" and https://www.mastercard.us/content/dam/mccom/en-us/business-payments/documents/business-payments-2022-whitepaper.pdf

[20] a better term may be a "digital piece of eight" – this *peso de ocho reales* was the first truly global money, minted by the billions and spread across Asia, Europe, Africa and the Americas by 1600. They were "the Visa and the Mastercard and the American Express of the 16th through to the 19th centuries"; Pieces of eight were even legal tender in the USA until 1857
http://www.bbc.co.uk/ahistoryoftheworld/objects/JO391t6cRtGxstjbE4EEmg

[21] indeed the IMF has already speculated openly about issuing a digital basket of currencies based on the SDR (Special Drawing Rights) mechanism as an alternative reserve currency https://www.investopedia.com/news/imf-chief-suggests-imfcoin-cryptocurrency-possibility/. This has significant, complex and controversial political implications (not least on existing reserve currencies like U.S. Dollar and Chinese Renminbi) but is a strong candidate as a global, official (non private), digital answer to Libra.

[22] "for good reasons no single global currency has emerged to date" as the German banks rightly observe

But more must be said on

- Is Libra's seemly selfless aim to promote financial inclusion[23], just a front to get its data hooks into yet another billion vulnerable people in the third world ? Some people living in developing countries[24] with corrupt administrations may indeed think they prefer to have a currency from Mr Zuckerberg. However most critical observers say there is a real danger of "digital colonialism" by Facebook[25].

- Although enterprise Blockchain is said to be able to scale better than open Blockchain, can a full system based on this actually really scale in practice to handle the huge global transaction volumes (the current 2 trillion$ payment revenue market[26]) ? Nothing remotely like this has been tried with the new technology. Gartner[27] thinks this will take yet another ten years and 90% of existing enterprise blockchain implementations already need replacement within 18 months.

- Can such a system overcome its inherent design flaws for the real world: attain the required consensus on the ledgers in the now required real-time, be implemented to handle gigantic ledgers at all endpoints (mobile devices) containing all global transactions since the beginning of time, ensure privacy given that all data is on public ledgers, allow the later correction of transactions on an immutable ledger, offer some central point of contact (to resolve disputes, to evolve the system, etc) in a fully decentralized environment, provide users with a new private key if they have lost it and recovery systems if they want their anonymous untraceable electronic money back in case of loss, etc etc ? Much more needs to be proved before one can possibly base an any critical system, let alone an economy, on such a system.

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[23] "[Zuckerberg] presenting a rosy view of how the cryptocurrency would provide a safe way for billions of people around the world without bank accounts to exchange money affordably" in "Facebook's Zuckerberg, Accused of Lying, Takes a Washington Beating", New York Times, 23 October 2019

[24] According to more recent statements e.g. https://www.youtube.com/watch?v=wgv8xmYj3bg the target market of Libra is now indeed to provide payment/currency for the unbanked/underbanked/developing economies, the vulnerable populations therein and the remittance services into them

[25] as already seen in network access: Facebook, as a "humanitarian" project
https://www.wired.com/story/what-happened-to-facebooks-grand-plan-to-wire-the-world/
provides free Internet access to many developing countries (Colombia, Ghana, Kenya, Mexico, Pakistan, Philippines, Zambia, Tanzania, etc) – if the local users then *only* access the Internet through Facebook, thus providing a welcome service to local users but also severe dependencies
https://www.theguardian.com/technology/2017/jul/27/facebook-free-basics-developing-markets

[26] plus the 77% of cash transactions worldwide.
All Transaction figures in this paper are from "Global Payments 2018", October 2018, McKinsey&Co:
https://www.mckinsey.com/~/media/McKinsey/Industries/Financial%20Services/Our%20Insights/Tracking%20the%20sources%20of%20robust%20payments%20growth%20McKinsey%20Global%20Payments%20Map/McK-2019-Global-Payments-Report.ashx

[27] see https://www.computerworld.com/article/3445036/heres-why-there-wont-be-a-quick-enterprise-blockchain-revolution.html "Here's why there won't be a quick enterprise blockchain revolution"

There is some debate[28] whether Libra is even really a crypto-currency, based on Blockchain, using Byzantine fault-tolerance algorithm or actually more like a closed "in-game currency" that we have known for decades from World of Warcraft Gold etc.. However, the debate is academic and technical – the important area for business and strategy to focus on is actually not in the technical algorithm at the back-end (whether DLT or classical database technology) but at the front end, as we shall see.

We can certainly conclude at this stage that the *concept* of a global seamless single digital currency is a need and a potential threat (if anyone can make it work).

The Chinese

Whenever "Project Fear" is called upon, it is always the Big Techs and the Chinese[29].

The Chinese government may indeed introduce a digital currency[30]. The motivations here are clearly

- to retain sovereignty against Visa/Mastercard/PayPal in the digital space. A weak argument since the Chinese already have their own – extremely successful – digital payment systems from Baidu, Alibaba/AliPay, Tencent, Xiaomi which are already much under Chinese government control.
- more importantly the motivation of the Chinese government is to gradually phase out cash, since only *electronic* payment allows the Government to trace the actions of its citizens (needed for Social Credit Score and more). Anonymous cash is a thorn in the side of any surveillance state.

These arguments clearly do not hold in Europe or the West. Nor is it likely that any Chinese digital currency will become dominant in Europe. Therefore, again the "threat" of the Chinese is exaggerated and therefore we **do not need to introduce a crypto-currency as an "answer" to the Chinese.**

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[28] e.g.
- https://www.coindesk.com/nouriel-roubini-says-facebooks-globalcoin-has-nothing-to-do-with-crypto
- „Libra hat nichts von der freien, unabhängigen, unregulierbaren Währung, die Satoshi Nakamoto bei der Entwicklung von Bitcoin vorschwebte" (Libra has nothing of the free, independent, unregulatable currency envisaged by Satoshi Nakamoto when he developed Bitcoin) in https://www.heise.de/ct/artikel/Wie-viel-Bitcoin-in-Facebooks-Libra-steckt-4471890.html "How much Bitcoin there really is in Libra"
- and many more

[29] indeed Facebook itself is stoking the fear: "China is moving quickly to launch a similar idea in the coming months," Zuckerberg told the House Financial Services Committee in October. 'If America doesn't innovate, our financial leadership is not guaranteed'." https://www.kapronasia.com/china-cryptocurrency-research-category/is-libra-really-a-threat-to-wechat-pay-and-alipay.html

[30] see https://www.financemagnates.com/cryptocurrency/news/chinas-stablecoin-is-likely-the-only-one-the-country-will-allow/ "China's Stablecoin is likely the only one the country will allow":
- PBoC announced that its Digital Currency/Electronic Payments (DCEP) is ready
- the eventual goal is replacing all banknotes and coins
- "[requires] 300,000 transactions per second … this kind of transaction volume is currently impossible using blockchain"
- "won't really be a crypto-currency at all"
- PBoC is looking to release digital cash with extra surveillance.

So, while there may be very understandable reasons why Facebook is trying to conquer the world with its own global currency, and why the Chinese government wants to increase digital surveillance – let us not react by fear, but by rational argument. For this one needs to take a holistic view of banking, payments, regulation, economics and technology. Looking from only one dimension will not work.

The fact is that we have an excellently functioning payment system in Europe. Let us **not duplicate[31] the infrastructure**, with enormous costs/efforts/risks, to solve a problem that has already been solved: the efficient movement of money between people and companies in Europe. This already works very well. Let us instead focus on making the existing system better (reaching 100% instant, reducing costs further, better user interfaces, better transfers into/out of Europe, facilitating more micropayments, etc) and try and export Europe's leadership in this area to the world to help all countries attain the benefits we already enjoy in Europe.

The real threats to banks/PSPs in Europe are not in the payments infrastructure – but in the lack of innovation to the customer (both to consumer and to corporate/B2B). It is at the **front-end and not the back-end where banks need to fight** to win against agile Fintech, against US big tech, against PayPal and yes, also against the Chinese (WeChat/Alipay) and to prevent becoming just the dumb pipe.
The key threat of the Libra is the idea, is the end-user focus: pay anyone everywhere as easily and cheaply as sending a message. It is not about the technology.

<u>The focus needs to be on the front end</u>

As we have seen, the infrastructure, the back-end (the attention area of ledgers etc) is already in very good shape in Europe. The problem is actually at the front-end where we have massive national, channel and usage fragmentation, for example

- the excellent iDeal can typically only be used in NL and only for C2B
- girocard can only be used in DE and only at the physical POS
- ApplePay can only be used by iPhone users
- The 50 (!) P2P solutions in Europe all work only in their local communities
- Micropayments[32] require yet other solutions
- etc

Thus **the real threat to banks is not Libra** (the backend) **but** a version of **Novi (previously called Calibra, the front-end wallet)** which provides a universal, unfragmented front-end. "Everybody" already has Facebook, thus if every device would be issued with a Facebook wallet overnight (which is easy for Mr Zuckerberg to do) - a version of Novi that uses not some speculative, attention-diverting Blockchain, but one which rides on banks' excellent back-end infrastructure - then the customer is lost.

[31] calls for „crypto-based payments to be executed directly between the parties … without the need for a separate payments infrastructure based on payment accounts" should read "as well as" i.e. two massive infrastructures in parallel for the foreseeable future

[32] Payments for small values – e.g. 10 cents for an article view, 0.1 cents per screw inserted into machine for M2M use – do not function economically using direct debits, card payment, credit transfers. Currently these work only using pre-paid wallets or models such as carrier billing. A universal end solution (the Libra vision) should surely encompass a harmonised way of paying also for these small amounts.

We would witness again what happened with PayPal (and ApplePay, and ELV, and …) – a third party rides for free on the massive infrastructure invested by banks. Only this time it would on a truly global, pervasive scale.

It has taken PayPal decades to onboard its user base (to date ca 285 million accounts in 25 countries); **Facebook** already has ten times that and **could switch on a front-end wallet that removes all fragmentation over all nationalities, end-devices, channels, use cases in one fell swoop.**

All usage, all user interface, all data would go to Facebook – and the banks are left to do all the hard work of moving the real money, satisfying compliance etc behind the scenes.
Thus, it is imperative that front-end initiatives[33] succeed in positioning banks as the seamless front-end provider to its users.

As the Eurosystem aptly remarks[34]: "The European payments industry needs to address this front-end fragmentation and provide a competitive pan-European solution that meets the needs of European users and exploits the benefits of the Single Market."

Outlook

The best suggestion in the Libra initiative and in most responses from banks is that we need to think seriously about a **pan-European (or ideally global) bank-based identity**. That really is a core problem that we need to solve urgently. For this the reader is referred to the excellent "Age of Consent - The Case for Federated Bank ID"[35].

So what is left of the questions posed at the beginning of this paper after a hard-nosed look at the facts ? Not much.
It may indeed be a case of "wrong remedies to misdiagnosed maladies"[36].

Let us therefore not be driven by fear, by the need for spontaneous reaction, but instead by rational analysis of the evidence. Although tempting to feed the media - who will publish/retweet anything as long as it contains the word "crypto" - let us move sagely to improve the huge assets we have already built before throwing out the baby with the bathwater and rebuilding everything again on very doubtful premises.
Let us be driven only by what really needs to be done: some improvements in the back-end

[33] such as https://thepaypers.com/payments-general/twenty-european-banks-working-on-setting-up-a-pan-european-payment-system--1239505

[34] https://www.ecb.europa.eu/pub/pdf/other/ecb.other191204~f6a84c14a7.en.pdf

[35] https://www.citi.com/tts/sa/flippingbook/2019/the-age-of-consent/gra30727_TTS_age_of_consent/

[36] see "Fiat Currency 2.0", Remarks to IMF Staff, 24 October 2019, Tony McLaughlin, Citi – available from the author, and https://www.finextra.com/videoarticle/2264/fiat-currency-20-counter-argument-to-the-cryptocurrency-narrative "Fiat Currency 2.0: Counter argument to the Cryptocurrency narrative" on how to fix payments

but above all focusing on an unfragmented front-end and solving digital identity. Let us make judicious pointed investments to upgrade our system with best practices and only be driven by solving real problems for our customers.

In summary maybe we can learn from SEPA, mobile payment and other recent experiences. We have seen that it is often very hard for banks to get together and agree on a common approach even if the target is sensible (singe market, mobile payment) and even if the threats are clear are imminent (global schemes, BigTech). The short term business case and the coordination effort and investments appear overwhelming. This is the "tragedy of the commons"[37]

Therefore the regulator should now issue a clear call for a „unified global, low cost, low friction means of paying - sending money between people, companies and machines across the globe as easily as sending a WhatsApp" (the Libra vision and the answer to the Facebook Novi threat). The regulator should define a clear, realistic, not too short and not too long timeline. The state should not enter into competition with the market in building up a parallel economy (e.g. CBDC).

Banks should then, on the basis of the regulation, define how best to realise this requirement – that is what businesses do, and much better than the state.
Then we shall have what the market needs, an answer to the threats (and a basis for new global business cases which will much compensate any investments now needed).

[37] a situation, in a shared-resource system where individual users, acting independently according to their own self-interest, behave contrary to the common good of all users – a concept identified by the British economist William Forster Lloyd in 1833

Ideally, we create a common vision of sharing data under consent[38] not only for payments (there are already more than enough payment schemes out there) but a more generic solution capable of performing multiple cases. Payments is only the first and special case. We need to build a distributed system, owned by many actors and industries, under a common governance and set of rules – a global **Data Scheme**. The first "payload" of such a Data Scheme should be *Payments*, but it should be designed to be extendable to other payloads, notably *Identity*[34] and *Invoicing*[39].

Europe has proven that it can do this, having created GSM which allows the many players in the telecom world to interoperate. It is also a generic scheme which not only allows telephony but also messaging, data, identity and more. GSM is a world-wide success and shows that two-sided markets can be made to work without building single centralized platforms and creating monopolies.

Let us build the "GSMA of Data" – and let payments be the first use case.

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[38] The full extent of what a data scheme with consent would mean is beyond the scope of this paper. However first inspiration may be drawn from "The personal data portability growth opportunity for the UK economy" by the UK Government 2018 https://www.gov.uk/government/publications/research-on-data-portability and the new EU Commission paper "A European strategy for data" https://ec.europa.eu/info/publications/communication-european-strategy-data_en.
Such an approach can redefine many key topics such as revenue models (e.g. away from advertising) and break the current platform strangleholds allowing one, for example, to move to another social media platform without losing access to one's friends … and generally help towards many more welcome commercial and social goals

[39] Billions of paper invoices are still sent around Europe every year https://www.billentis.com/The_einvoicing_journey_2019-2025.pdf

Appendix: Programmable Smart Money/Smart Contracts

When arguments are sparse, it is always good to say "It is obvious that …". However, it is less than obvious whether so-called "Smart Contracts" are smart or indeed contracts. A contract is a formal legal term defining the rights and liabilities between legal entities. An algorithm (such as DLT) is neither a legal entity, nor can it sign a contract in any meaningful legal way, nor can it be enforced[40] or held liable[41].

All companies have been using ERP systems to pay suppliers automatically upon delivery subject to terms for decades. The Uber app already allows the "automatically initiated payments on performance of a service" for consumers. Road usage fees get paid automatically as the car/lorry drives through a toll gate. These are all excellently functioning real solutions with real contracts with intelligent conditional payment. There is absolutely **no need for "smart" "programmable" money** based on so-called Blockchain "smart contracts" that try to duplicate this.

"Smart Contracts" – as is acknowledged even by most serious proponents – are neither smart nor contracts. They are "if" statements in some code embedded in a computer.

Not contracts, not needed, not smart.

[40] civil law generally allows freedom of form: buying goods by e-mail/telephone/web, even buying a horse with a handshake, can all be legal if both sides have a common understanding and agree to the terms. However to prove that the buyer understood and agreed to the contents of a smart contract will be a severe challenge: is what was displayed on some portal and clicked on (the frontend) really the same as the programmed smart contract code (the backend) ? Good luck with enforcing this in a court of law … see BGH 16.10.2012 X ZR 37/12

[41] a similar discussion around autonomous cars shows that the car itself can never liable. There is still some debate who is going to be liable: the driver, the insurance company of the driver, the company operating the driverless car service, the government who gave the license or the company that programmed the route – the outcome is still open. However, it is certainly a person a company or an authority, not the technology/algorithm, that is liable.

However a new debate is opening about this:
"Q: Someday a self-driving car without a driver will get in an accident. Who is to blame then?
A: If we are talking about 2030, then the car … there will be a new kind of liable person … called electronic persons … legally culpable …. you can sue your car. In 2030 decision-making computers will no longer be completely pre-programmed, instead … neural network … no-one knows what the car knows, not the manufacturer, not the owner and certainly not the passenger…. Very intense debate over the last year in the European Parliament on whether to incorporate the electronic person into the legal system … Volvo are already buying insurance policies for this scenario" [Sven Gabor Jansky: "Mobility will be free by 2030"]