

The future of instant payments: Are we investing billions just for mobile peer-to-peer payment?

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ABSTRACT

The implementation of instant payments in Europe will most likely take many years and will require significant investments, as well as years' worth of management attention at banks and regulators that could otherwise be devoted to other topics, notably innovations beyond infrastructure. Mobile peer-to-peer (P2P) payments are already enjoying some success, notably in the UK, Sweden, USA and Kenya. However, countless attempts at mobile payments by digital disruptors, banks, mobile operators and others all over the world have largely failed. This paper analyses why successes are so rare, why they have so far only happened outside the Eurozone, and whether a true underlying instant infrastructure is necessary for them at all. Finally, it maps a success for the future: how the emergence of the new pan-European instant payment infrastructure may catapult Europe to the forefront of new services. Comparisons are made between policy decisions in Europe versus other geographies and the consequences therefrom. This paper widens the

debate beyond the current focus on infrastructure and simple P2P applications. It argues that the success will come from a plethora of applications rather than infrastructures. Thus, the paper welcomes the advent of a pan-European (and increasingly global) instant payment infrastructure and aims to show that its real value comes in its application.

Keywords: ECB, ERPB, instant payments, P2P, M2M, mobile payments

BACKGROUND

The European Central Bank (ECB) and the Euro Retail Payments Board (ERPB) have together motivated the European payments industry to put in place an instant payments infrastructure that will allow all-year, around-the-clock payment with the recipient having access to the funds immediately (ie within a few seconds). It is 'cashless cash' with the same immediacy, availability and finality — but with reach not just between people next to each other but remotely anywhere across Europe. The complexities in realising this in the diverse European payments world of over 4,000 banks and many other players are considerable and are discussed elsewhere.¹

Most of the considerations so far have been on the technical, organisational and commercial questions of the infrastructure. The present paper, however, focuses on the potential applications and use cases once such an infrastructure is available.

This ‘what for’ question (rather than just the ‘how’ — and indeed the ‘how much’ — questions) is essential and may have been somewhat neglected so far. The ECB has openly ‘admitted’ that there was no prior use case analysis. It was simply — and maybe rightly — felt that Europe needs a modern infrastructure to accommodate the increasing internet and mobile real-time commerce and that future generations will expect. ‘Send money as quickly and as easily as an e-mail’ is the slogan.

Is the assumption that better infrastructure will lead to better services justified? Infrastructure development will consume many years’ worth of management attention and likely more than €1bn of investment. This paper will debate some of the arguments around this case and show some likely outcomes of this development.

THE CASE AROUND INFRASTRUCTURE INVESTMENT

A number of countries throughout the world have invested heavily in new instant payments infrastructures.^{2,3} These range from Japan, which has had instant payments for 40 years, to Australia, which is currently rolling this out. Around 20 countries have so far developed an instant payments infrastructure of some description⁴ and for diverse reasons.⁵ In Europe, instant payments are so far available only in non-Euro countries such as UK and Sweden.

Have those countries with a history of instant payments proven that the investment is worthwhile? Have Japan⁶ and the UK forged so far ahead in payment and e/m-commerce to justify that instant payments has been a good investment for them? The case is not easily made.

It has certainly been clear that the investments — and equally importantly the management time and attention — have been significant. Well-informed sources estimate that ‘implementing real-time

payments in a bank will be more expensive than implementing the Euro’.⁷ The UK ‘Faster Payments’ infrastructure is estimated to have cost £200m plus investment costs borne by each participating bank.⁸ In comparison with other countries, this figure is low, as banking in the UK has a large concentration (there is a single clearinghouse and three-quarters of UK bank accounts are concentrated in only four banks⁹), making deployment of instant payments comparatively easier. It is also widely accepted that the true costs of instant payments lie largely within each bank and that maybe only 10 per cent is at the central infrastructure. Making each bank’s system — its ledgers, its booking engine, its back office, its anti-money laundering/sanction checking, etc — capable of processing in real time is a massive and costly task, also given most banks’ extensive history of legacy systems. Thus, although standard software (eg for real-time core banking systems) is becoming increasingly available, and although several market initiatives are underway (eg the European Banking Authority and European Automated Clearing House Association, not to mention blockchain) to construct the real-time clearing and settlement networks, one can confidently predict¹⁰ that implementing instant payments across Europe will absorb very many years’ worth of management attention and developer resources and cost in the region of billions of euros, all of which can then not be used for other purposes.

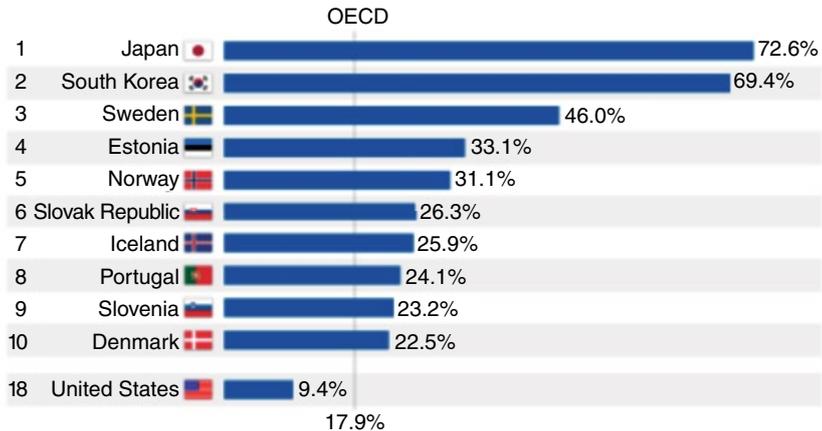
Other geographies — notably the USA — have not been investing so heavily in infrastructure. Indeed, their payments infrastructure can reliably be described as well behind Europe — even before the introduction of instant payments. Sending money from one account in one bank in one state to another account elsewhere in the USA is nothing like as efficient as in Europe. Some banks even print cheques in their back office and send these by postal service to the recipient bank in the other state in order to

Figure 1 The USA is way ahead on services – but way behind on infrastructure

Tech  Chart of the Day

United States Lags Behind in Fiber Optic Penetration

Percentage of fiber connections in total broadband subscriptions



OECD countries, as of June 2015

BUSINESS INSIDER

Source: OECD  statista 

Tech  Chart of the Day

These Countries Enjoy the Fastest Internet Speeds

Average connection speed in Q3 2015 (in Mbps)



BUSINESS INSIDER

Source: Akamai  statista 

Source: Statista/Business Insider 2016.

complete the customer’s ‘online banking’ request! The US payment infrastructure is not leading the world. The USA has also been behind on mobile infrastructures (having backed competing standards and

‘pagers’ in the past before finally adopting Europe’s Global System for Mobile communication¹¹⁾ and is still behind on other infrastructures such as fibre and general internet speeds (Figure 1).

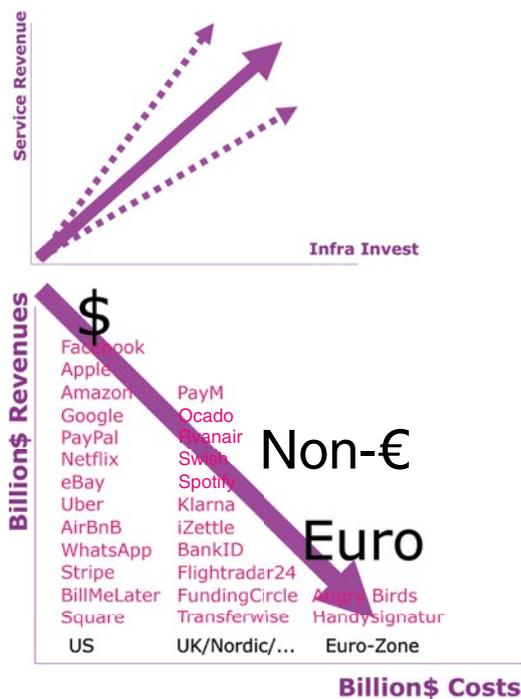


Figure 2 Infrastructure investment: Theory and practice

Source: EquensWorldline Research 2016.

Nevertheless, it is critical to note that the USA — despite¹² being behind on many areas of *infrastructure* — is very much in the lead in the area of *services*. Figure 2. Most of the modern industry-redefining services such as Amazon/eBay (retail), Netflix (television), PayPal (payment), Uber (taxi), Facebook (networking), Apple (communication), Google (life-changing in many ways from Mail to Translate to Maps and more), AirBnB (hotel) etc have all originated in the USA, despite (or maybe even actively stimulated by?) the poor underlying infrastructure.

In Europe, new services largely seem to have emerged only in non-Euro countries, such as PayM and Transferwise in the UK and Swish and iZettle in Sweden.

Where are the innovative new industry-changing services from the Eurozone? How has the massive investment in time and money in Single Euro Payments Area (SEPA) infrastructure paid off? It seems that those countries that were ‘forced’ into SEPA had

little time and resources for innovations. Is it therefore wise to mandate another huge new infrastructure project — instant payments — upon Europe? Will the main effect of the European instant payments investment be to allow US giants like Amazon and Netflix to glide even faster and more efficiently across Europe? These are hard questions for policy makers.

The European Commission has the noble aim¹³ to increase the global competitiveness of Europe, to create jobs and growth, to support innovation and the digital revolution — but in fact the European Digital Single Market Agenda may have a disproportionate focus on infrastructure topics: fibre penetration, telecoms, parcel delivery, standards, platforms and such. The topics of developing appropriate skills, creating a climate for innovation, developing new market and funding models, tolerating (or indeed encouraging) failure and iteration, developing models for working with regulators¹⁴ etc are comparatively underdeveloped — especially compared with the USA and UK¹⁵.

Many regulators outside the USA seem to feel a natural draw towards telling the industry what plumbing¹⁶ to implement.

For companies working in the infrastructure field, such focus and development are most welcome. However, in the interests of Europe on the stage of international competition, it is important to note that jobs, growth, competition, investment and innovation — the declared goals and priorities of Europe’s Single Digital Market¹⁷ — will only be achieved through new services. Infrastructure can not be *l’art pour l’art* but must only be engaged in to add value to consumers and businesses and to let new services flourish.

As this paper will show, it may¹⁸ have been wise to invest in infrastructure in the *past*, but European policy focus should *henceforth* be on the development of services. Although less measurable than fibre speeds and transaction times, there are clear policy choices¹⁹ that can and should be made to develop new

services — and hence innovation, growth and jobs — and prepare Europe for the future.

THE CASE FOR NEW SERVICES

Given that instant payments infrastructure will be built, this paper recommends focusing efforts on services that add true value and that are enabled by this infrastructure.

Europe’s initiative to promote this modern infrastructure has galvanised the US Fed²⁰ into considering a modernisation of its infrastructure so as not to fall even further behind. Thus, there is clearly the feeling, also in the USA, that instant payments has potential to drive new services, growth and jobs, and is important for a geography’s competitiveness.

The only new *application* that has so far been discussed in any depth in the public sphere, however, is mobile person-to-person payment (mP2P).²¹⁻²³ This is a good first step, but not the only benefit of instant payments; rather, it is the beginning of a whole family of new services (Figure 3).

Indeed, mP2P can largely be implemented on conventional payment infrastructure —

without instant payments. PayPal has been providing P2P for decades by employing a wallet; Venmo (mP2P) is massively successful in the USA, where nothing like a modern instant payments exists; and PayM is widely deployed in the UK, although Faster Payment only ‘looks’ like instant payments but actually relies on next-day settlement. Other ‘instant-looking’ services have been set up based not on instant payments but on underlying *guarantee* services (provided by online banking based e-payment schemes (OBePs) like iDeal) which give confidence to the recipient that they will receive their money even though the actual funds transfer through the underlying infrastructure may take a day (SEPA t+1) or longer (over weekends/holidays). As discussed, a plethora of new applications have been developed in the USA which provide excellent fast services despite the lack of high-speed underlying payment infrastructure.

Thus, the discussion should focus on what new services — starting with P2P but not ending there — are made possible through *true* instant payments — when funds really can be immediately and irrevocably moved, 24/7, on any day of the year.

Figure 3 P2P payment is only the beginning and will spawn a whole family of new services

	P2P	P2b	P2B	P2G	M2M	...
Local	ca. 50 solutions in Europe (PayM, Swish, ...)	Pay babysitter, window cleaner, ...	Pay taxi, POS, ...	Pay fines, taxes, ...	Car pays toll, internet of things, ...	
EURO-wide	Interoperate across Europe ? [ERPb]					
SEPA-wide	£, NOK, SKO, ... FX – Transferwise, ...					
Global	\$583bn p.a. global remittance market [World Bank]					

Source: EquensWorldline Research 2016.

MOBILE PEER-TO-PEER PAYMENT

Beginning with mP2P, one should note that simulacra (like PayPal, PayM etc) do not provide immediate availability of funds. Thus, if one wishes to send one's daughter money to be used immediately at a super-market checkout or to withdraw money immediately at an automated teller machine (ATM), only the real thing — instant payment's 'cashless cash' — will do.

The larger topic of cash reduction is discussed elsewhere,²⁴ but it should be noted that a very large percentage (eg 87 per cent in Germany²⁵) of P2P payment transactions are currently conducted in cash. Pocket money, refunds for drinks etc are all paid out using notes and coins. Thus, if a convenient electronic alternative (tapping father's phone against son's phone to top up his pocket money) were available, it would be possible to reduce the current massive share of cash transactions in this space. This would be beneficial to society and industry, as evinced by many studies.²⁶

A market analysis by the ERPB²⁷ identifies around 50 mP2P solutions in Europe. The USA's Venmo has knocked Starbucks off the throne as the most popular mobile payment app of all. Thus, there is clearly supply and demand for mP2P.

However, this can only be the beginning. The ERPB has launched an initiative to interconnect the 50 mP2P solutions in Europe to enable pan-European reach. Once this is based on instant payments, the funds will also be available to the recipient immediately and thus provide a 'cashless cash' alternative that even works with the father in Germany helping his daughter to pay her bistro bill in Paris.

However, paying back a UK-based colleague for lunch would require a solution for currency conversion. This is around the attractive, and hence hotly contested, topic of foreign exchange (FX). The success of Transferwise documents the need for an efficient, international, multi-currency

Money Transfer Operator Market Share By Channel
2014 – Cross-Border Transfers Only

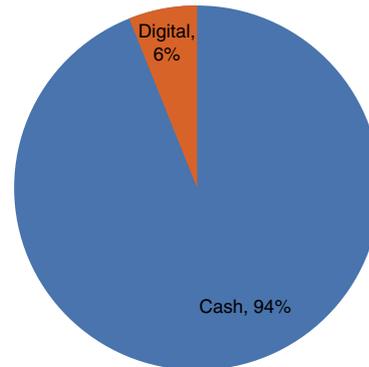


Figure 4 Remittance payments are almost exclusively in cash

Source: Business Intelligence 2015.

payment solution. With instant payments, new FX services can be offered instantly and with good business cases for the providers.

Finally, mP2P can — and should — be extended beyond Europe and its currencies and geographies. Connecting Europe's mP2P to the USA's Venmo²⁸ would allow fathers to help their offspring while at business school or during their gap year travels in the USA. More importantly, this opens the door for electronic remittance payments. This is a huge and exceedingly profitable market. The World Bank estimates²⁹ that US\$583,000,000,000 worth of remittance payments are sent around the globe every year. Migrant workers send money home to their families in Eastern Europe, Asia, Africa, South America and more. This is almost exclusively done in cash (Figure 4).

Most of the world's population is equipped with a mobile phone. If money can be remitted home using mobile P2P payment in an efficient modern electronic form, this would be a huge benefit to migrant workers and their families, and would increase social inclusion and benefit society at large. It would also be a huge business opportunity for those wishing to offer such new services as alternatives to existing international cash remittance solutions.

However, as noted before, instant payment may actually not be a prerequisite. To pay in a restaurant or to send money home every month, it may not be necessary for the funds to arrive in a few seconds. In many scenarios, the reliability and *predictability* (I know that the money will arrive, I have an upper limit — which can be days — when it will be on my account) may be more important than the speed of settlement.

In summary, however, let it not be said — as it often is — that this is a niche (see the billions of remittance payments), provides little benefit (see today's user expectations), has little demand (see the success of Venmo) and that no one can make any money out of it (see FX, PayPal, Transferwise). mP2P is an excellent application area and the basis for more.

Case Study: India — mP2P, instant payments, convenient identity, biometrics and micro ATM

The interested reader is advised to look at an initiative driven by the National Payments Corporation of India (NPCI) and the Indian government towards a unified payments interface.³⁰ This is to increase financial inclusion and modernisation of society in India, thus leapfrogging a country with only six non-cash payments per person per year (ie one of the most physical currency dependent countries in the world) towards a more cashless society. Every person is issued a unique (Aadhaar) number by the government and, as mobile penetration is also prevalent even in the remotest villages and poorest sectors, money can be sent from any person to any person using this service. Addressing of the recipient is done either via the Aadhaar or via another memorable alias,³¹ eg mobile-number@carrier or account@bank or userid@mailprovider etc.³² This represents a very convenient way for the wage earner to send money home to his wife in a remote rural village or for a passenger to pay the taxi driver. The money is available immediately as the service is based on India's real-time Immediate Payment Service (IMPS) — the first large-scale system not based on cards or SWIFT. The potential disadvantage of low literacy has been turned into an asset by the Unique Identification Authority of India (UIDAI) setting up

a biometric³³ database which allows transactions to be authenticated with a fingerprint or, in future, iris recognition. This raft of initiatives is quite remarkable in that it is designed to scale (to cater for 1 billion Indian citizens), is explicitly designed around social inclusion/a fairer society (and hence cash reduction) and is continuously spawning further true innovations.

One such innovation not seen elsewhere is the 'micro ATM' (Figure 5).³⁴ This allows rural communities, previously typically unbanked, access to banking services even if they do not have access to a mobile phone or may have limited literacy (a fingerprint is all that is required for electronic transaction). It allows cash services via the thousands of micro ATMs carried by authorised agents into the villages, and local residents can withdraw and deposit cash with the agent by identifying themselves with their fingerprint at the micro-ATM, which registers the transaction on their account.

The micro ATM represents a true combination of innovations (identity services, customer-friendly addressing, mobile payment, biometrics, instant payment) targeted for real local customer needs, thus making a real difference.



Figure 5 A micro ATM

BEYOND P2P: PERSON-TO-BUSINESS (P2B) PAYMENTS

As discussed, P2P payments have quite some potential, especially when extended across Europe, across currencies and even beyond to the enormous largely untapped market of electronic remittance payments. But the use cases for instant payments do not end there.

Once people become more used to paying each other electronically in convenient cash-equivalent ways (whether tapping father and son's phone together or donating to charity by holding the phone up to television screen), it will surely become possible to pay the window cleaner, the handyman, the babysitter — or any small 'merchant' offering their services — electronically. In Sweden, where paying by cash is the exception, there are even electronic alternatives for contributing to the collection plate at church or donating to the homeless person in the street. Only the coin for unlocking the supermarket trolley has resisted all attempts at modernisation.

In countries where contactless cards have been rolled out (in Europe, notably the UK and Poland) people find it much more convenient to tap a card rather than counting out the coins for a coffee. In the UK, the contactless limit has recently been raised to £30 so that convenience store items, newspapers, snack lunches etc can be bought at the flash of a card.

Case study: Mobile payment

Some see the next stage of evolution to be in tapping a phone instead of a card. We have been sceptical of this proposition since it was first raised.³⁵ Tapping a phone raises a very large number of significant complexities³⁶ and adds negligible value (indeed is provably more difficult and slower³⁷) than tapping a card. This explains why the hundreds of mobile payment pilots all embracing this model have failed.³⁸ Mobile payment has not even taken off in Japan,³⁹ where contactless infrastructure, mobile phones and a techno-embracing population are all a given. Even Apple — usually so smart in all consumer propositions — has succumbed to the

hype of tapping phones (or watches) at the point of sale (POS) and met with very limited success.

Mobile payment will take off only if it adds value. Within Europe, added value tends not to be found in loyalty schemes and coupons (as US consultants like to so much comment). A big added value is surely convenience (eg pay-by-click, instant biometric authentication). This is the main potential advantage of mobile payment. Apple and others have made a big success with their in-app payment process that allows one to purchase goods with a simple click of a button or finger scan.

The future of mobile payment is not tap-and-pay but app-and-pay.

As a first evolution, P2P will lead to P2b (small 'merchants') and then to P2B (real merchants online and in the physical world).

The migration from P2P to P2B is not trivial. Merchant payments are different and more complex in a number of significant ways (refund procedures, e-commerce law, etc). However, although the evolution is not easy, it can be done, as Venmo demonstrated when it announced its expansion into in-app shopping services and partnerships with sports ticket and food delivery organisations to allow payment information stored in Venmo to be used to buy tickets or order meals. This aligns well with Venmo's stated ambition to be more than a payment method, but also a social channel for friends to connect: to message, to form groups, to repay each other after a night out and hence also to go to concerts and cinemas together and order a pizza after. All this is integrated into what was once simply P2P.

Looking now at P2B, this large use case will surely arise for instant payments in the future. The current P2B solutions — both online and at the POS — are largely card-based. Typically, these have not innovated significantly since the beginning of e-commerce (1990s) or retail (te first EFTPOS in the 1980s). Sixteen-digit card numbers are typed into mobile websites and pieces of plastic are inserted into traditional, single-function, lock-in/closed, high-cost devices. However, new solutions are emerging in the online and physical shop space. POS solutions using open elegant iPads,⁴⁰ beacons recognising customers as they enter the shop, self-checkout⁴¹ solutions at supermarkets and hundreds of new ideas are being promoted as alternatives⁴² to traditional POS checkout that make life easier for merchants and consumers. If the money can then also be transferred instantly between bank accounts (the premise of instant payments), then there will be less need for intermediaries, wallets and other such complicating

solutions. In addition, reconciliation and risk will be much improved for merchants. It will also benefit banks and their new competitors to have money being paid directly between bank accounts rather than being disintermediated by intermediaries, wallet providers, in-game currencies etc. This is thus a win-win for many industries and stakeholders.

Similarly, modern online P2B payment methods improve significantly upon entering card credentials in extensive forms, following online authentication procedures, employing intermediate wallet providers with their own registration and balance management complexities etc. Using modern security methods, one can pay at the mobile checkout and conveniently provide the delivery address with the payment data so that the merchandise can be shipped home reliably, and the merchant gets all the necessary data for automatic bookkeeping and reconciliation — all this alongside the other advantages that modern technology offers. (See app-to-pay in the mobile payment case study above.)

Increasingly, hybrid solutions are allowing electronic checkout in the physical world. Examples are mobile phone payment solutions in the Apple Stores (where the salesman's phone helps the customer to check out in the physical store) or the Amazon Go store (where the customer can just walk out — with their own phone running the Amazon app in their pocket — to pay for goods taken off the shelves). Another example is the successful Pizza Express app, which allows one to pay (and to leave a tip) without summoning the serving staff after having sat down for a meal. Most famously, Starbucks has shown how convenient mobile payment adds value to a merchant (not only through faster, more hygienic checkout, but also by providing massive extra liquidity to Starbucks' corporate treasury through the aggregated balances of tens of millions of wallets) and is very much embraced by its customers (10 million uses every week). Uber has shown that paying electronically in a physical situation is a major advantage and can generate disruptive business models. The list goes on.

Alternatives to classical POS device and modern electronic P2B checkout solutions and hybrids where the classical distinction between online and offline commerce are increasingly blurring, are described extensively in the literature⁴³ and thus will not be developed further here.

However, it is to be noted that beyond generic solutions, a large number of specific solutions are emerging for specific industries. This is especially the case for those industries that are particularly ripe for disruption in this area. For example, the custom in some countries of paying for petrol via a card

reader integrated into the pump — before actually getting any petrol — is hardly a compelling proposition. The oil industry has developed own card and own payment solutions since the classical payment industry has so far not developed integrated solutions, for example, that allow a fleet driver to pay and also register their mileage on one card or for drivers to register interest in a snack before approaching a petrol station etc. Furthermore, petrol is an example industry where it may be critical to get the money reliably and in real time around the clock from customers who may be driving in from other countries before the goods are delivered. Thus, instant payment infrastructure (instant, irrevocable, pan-European 24/7) can clearly play a role here for the garage operator to get his money immediately and irrevocably before the driver leaves the station and also to offer new integrated (mileage, shopping) applications on his mobile together with the petrol filling.

More widely, there is a very large 'long tail'⁴⁴ of industry-specific solutions, certainly not restricted to the oil industry, that can be significantly improved and which offer excellent business opportunities for innovative players.

INSTANT PAYMENT AND THE REVISED PAYMENTS SERVICES DIRECTIVE (PSD2)

Extrapolating the above thought on how instant payments may benefit specific industries, one can surmise that the combination of instant payments with PSD2 — both of which will enter the market more or less simultaneously around 2018 — will be a catalyst for innovation.

PSD2 mandates that third-party payment providers (TPPs) will be able to offer new services by initiating a payment directly from a bank account (payment initiation service — PIS) and/or by using data directly from the bank account (account information service — AIS). This will enable a whole new industry of FinTech and FinPay players to develop new solutions. Much like the app store⁴⁵ model for iPhone and Android, PSD2 will allow merchants and consumers to choose from many new services (bank 'apps') — not just from their bank

— on how to manage their finances and make payment.

One example of a FinTech app could be in the area of public transport. Paying for tickets is a large industry and currently very complex. Transport for London (TfL) has a history of being ahead of the game, introducing contactless ‘Oyster’ payment cards over ten years ago and having massive success. Paper tickets and cash payment have disappeared and 24 million journeys are paid daily in London using this quick, convenient solution.⁴⁶ However TfL, just like the petrol industry, did not actually want to set up a payment solution — it only developed a payment solution out of need as the payment industry failed to offer anything suitable. Now that contactless cards are prevalent in the UK, TfL is rolling back its own proprietary Oyster solution and allowing generic contactless bank cards as means of payment. This use of bank cards for public transport is being met with good take-up as customers prefer to use their usual debit/credit cards rather than having to carry another single purpose (Oyster) card and manage (topup) its pre-paid wallet.

The complexity for TfL and the banking industry to introduce bank-card-based payment was considerable. Normal bank cards have no means for managing daily caps (Oyster ensures that cardholders never pay more than a certain amount per day); for handling sometimes check-in only (bus) and sometimes check-in/check-out (tube) scenarios; have complicated online and offline authentication procedures; typically do not work at the millisecond speeds required at transport gates etc. Only with massive effort by multiple parties was a workable⁴⁷ solution with bank cards found for public transport.

Thus, in the new world of instant payments and PSD2, the answer seems to be to allow a third party (TfL TPP) to develop an app that automatically initiates a payment (PIS) to TfL whenever a ticket gate is crossed. A user can conveniently check which journeys they took and how much

they paid for them (AIS⁴⁸). This can be effected either by touching one’s card/watch on a reader, or even better, a beacon signals to an app to open automatically once one enters the underground station or steps on a bus. Simply put, it is the public transport equivalent of the Uber experience.

Judging by the creativity unleashed by the iPhone being opened up for third-party developers, one can expect much creativity to be unleashed once payments and bank accounts are opened up to FinTechs⁴⁹ via PSD2. Adding instant payments into the mix, which enhances the proposition significantly by providing immediate guaranteed funds, will surely result in innovative solutions that we can not imagine today.

NOVEL USE CASES THROUGH INSTANT PAYMENTS

Previous examples basically showed natural extensions to existing scenarios. While they may still add good value, doing POS in a different way is still a POS payment. Paying on a mobile for a transport ticket is still an electronic version of a paper ticket. Giving one’s son pocket money by mobile phone is essentially the same as giving him cash. An app paying for petrol as one pulls out of the service station is still the use case of paying for petrol. This section explores the possible existence of totally new use cases, which were simply not possible before the introduction of instant payments.

Looking at the banking industry in those countries that have introduced instant payments, one could glean the impression that one can now do the same as before — only faster. Similarly, the basic case in Europe is to move from SEPA Credit Transfer (SCT) to Instant SEPA Credit Transfer (SCT^{inst}). The same as before, only faster. Will that be all?

The ATM industry — once a true innovation — does not seem to have moved much since its introduction in the 1960s. Using an ATM to pay bills, deposit cash or to top up a mobile phone are only marginal

improvements to the experience. Some true innovative concepts consider getting rid of the ATM card, or indeed of the ATM itself (eg 'social ATM'⁵⁰ or cardless ATM⁵¹). However, the goal can surely not be to make ATMs — and thus cash — even more efficient⁵² but to provide credible electronic cashless alternatives. Thus, this paper will not explore further how to improve cash ATMs, but instead look at use cases for instant payments 'cashless cash'.

Looking at non-banks one can often see creativity that extends beyond 'the same as before, only faster'. Staying for a moment within the bounds of the financial services space, one could witness the rapid emergence of the payday loans⁵³ industry. Whereas applying for a loan used to be a lengthy process (documentation, application, credit check, payment terms, payout, repayment, issue resolution, etc), new service providers are now leveraging instant services to complete the full process from application to payout in 15 minutes. This makes it possible for applicants who are short on cash at the end of the month to get immediate relief — a service that was not practical before (eg if the application procedure already takes longer than a month).

The secret to making this possible was in the provision of online real-time credit checks (eg an application programming interface at Experian to provide Wonga with an instant credit score) and — this is now possible with instant payments — immediate availability of the funds as soon as the loan is granted. The client in dire straits before the weekend shopping has the money immediately and not after the weekend (SEPA t+1 working/business day) and really can spend the money at the supermarket or withdraw cash at an ATM (having not just an iDeal 'guarantee' message or the virtual money in a PayPal wallet — but the real money in a real giro bank account).

Looking at financial services beyond payments and loans, one can find further examples in the insurance industry. In

order for an insurance to be legally valid, the money must — by law — be physically in the account⁵⁴ of the insurer before it is activated. Thus, since the advent of instant payments, it is now possible to open the market for instant insurances. For example, if one is standing at the head of a ski slope, one can legally sign up and pay for an immediate insurance for the next 30 minutes to cover bone breakages. Likewise, one could spontaneously insure a car and its passengers for the next few hours in unexpected heavy and dangerous traffic, or have instant third-party insurance for when your son borrows your motorbike or you borrow your friend's vintage car or stay in his holiday home — insurance for as short a period as the next two hours or two weeks. It is expected that many such new insurance P2B scenarios may emerge due to instant payments.

The insurance industry is also a good case for instant business-to-person (B2P) payment. If a fire should destroy a home, the claimant will want his money instantly — not a cheque to be cashed during banking hours, not a guarantee, not credited after the weekend. The insurance can pay out directly to the customer's bank account in real time and the family can take a hotel, get emergency treatment and pay for repairs. This can be truly life critical.

Another new scenario in the B2P space is emerging in the UK. Since the advent of Faster Payment, labourers can be paid on a Friday the exact amount based on the actual hours worked that week (rather than a standard weekly amount which is corrected later — as is the case for non-instant countries). This allows the recipient to plan their weekend spending better and relieves the employer of complex procedures of accounting, pre-paying assumed totals, demanding excesses back and paying the right tax. Again this was not possible in the 'old' SEPA days.

In the related government-to-person (G2P) space, citizens will surely appreciate receiving benefits cheques in electronic

form through instant payments. Due to the European Payment Account Directive (PAD), all EU citizens have access to affordable banking and thus benefits can be paid to everyone electronically and — thanks to instant payments — instantly. Benefits and pension recipients are famously sensitive to time delays,⁵⁵ thus the high predictability of instant payments (not only ‘sometime within the next three days’ but ‘*now* and every month at exactly the same time’) is of paramount importance. Access to electronic banking instant funds transfer may improve social fairness as low earners typically pay excessively for cash services (eg paying utility bills in cash bureaux), pay higher rates for loans (as they have poor electronic transaction history etc) and, although already at the disadvantaged end of society, are thus even more disadvantaged if they have to rely on cash only. Thus, moving benefits claimants into the banking and instant payment space might also make for a slightly fairer and more inclusive society.

Looking beyond financial services, and beyond payment/banking/loans/mortgages/insurances, there will surely be a host of new applications enabled through instant payments. Gambling, lottery and securities industries will be much facilitated by the money being reliably, irrevocably in the account before the bet is made. This will significantly reduce fraud⁵⁶ in this area and reduce the effort for payment management and reconciliation. This in turn leads to much better user experiences and lower costs. The clients will also appreciate the instant payout when their gamble pays off.

Speculation on what further new use cases will appear is beyond the scope of this paper. However, the enormous proliferation of in-game currencies (Linden dollars, World of Warcraft gold, Simoleons etc), of social media payments (Facebook credits etc) and more, is evidence enough that once an electronic cash-like cash is available, this will bear fruit for all industries that are

online and that want to make money — ie all industries.

As discussed previously, PSD2 will unleash this creativity on the market with the developer power of user-centric non-financial service professionals. These new entrants not with bank-internal views, but with the user in mind, with design and usability backgrounds will likely bring about an explosion of new creative solutions akin to the app explosion (driven by creative third parties not in the mobile network operator (MNO) world but with good understanding of games, of users, of design, of fun, of usefulness) on the mobile phone.

Case study: Buying coffee

A surprising hotbed of payment innovation is the coffee shop industry. Starbucks has been one of the few companies to develop a compelling mobile payment proposition. By any measure, this has been a huge success: the number of users, the number of transactions, the number of shops, the cumulative value held in the Starbucks wallets,⁵⁷ the usability etc all show a clear win for all participants. Only recently has another mobile app (Venmo mP2P) overtaken the Starbucks app and claimed the crown as the world’s most popular mobile payment solution.

The coffee industry was also one of the first to allow customers to pay by card instead of by cash/coins even in small retailers by embracing the mPOS trend (iZettle, Square, etc). This turns the coffee shop’s owner’s iPhone/iPad into a quick, cheap, flexible card payment acceptance device. Large coffee chains like Pret-a-Manger were also among the first sectors to adopt contactless card payment to allow the purchase of snacks and drinks with the tap of a card rather than with cash or by the comparatively slow and cumbersome and unhygienic chip and PIN technology. (Cash being, of course, the most unhygienic⁵⁸ solution of all, and often perceived as such⁵⁹ — an important factor in the food industry.)

Thus, further new innovations can confidently be expected in the area of coffee purchase. Some are already on the market. In Denmark, where mobile payment is widely accepted and cash is rightly considered rather old-fashioned, coffee shop chains have come up with a solution that improves not only payment but the whole purchasing experience.

In most coffee shops today, one must wait in line, then tell the server what kind of coffee one wants, pay for it, then stand aside in another (usually more informal) line to wait for the coffee to be brewed, and when one's name is called out to collect the beaker of coffee and leave the shop.

The Danish solution, by contrast, launches an app as soon as the phone notices that you are approaching your usual coffee shop, asks you to confirm with one click whether you want your usual cappuccino with extra shot and no sprinkles. The app will then set in motion one of the brewing machines at the front of the shop so that your personalised coffee is ready for you to collect as soon as you come through the door. You pick up your freshly made personalised cappuccino and leave. The payment is made automatically in the background, like every morning — the Uber experience of coffee.

BUSINESS-TO-BUSINESS (B2B)

So far, this paper has looked at new use cases in P2P, P2b (small merchant), P2B (POS and online purchase), B2P (insurance payout), G2P (benefits payout) and even ATM (P2myself). This already includes many scenarios not usually examined in the context of instant payments — where, if at all, 'the' use case is largely assumed to be mobile P2P or just making things faster (SCT^{inst} instead of SCT). Thus, it is hoped that this paper has shown that the discussion and usefulness of instant payments should and will be wider.

One use case domain remains: business-to-business (B2B) payments (including government-to-business, business-to-government and government-to government for government payments including taxes, subsidies, public procurement and more).

As the reader well versed in payments will be aware, the value of B2B payments is a *much* bigger market than retail payment (Figure 6). Retail is often the focus of discussion as everyone is in daily contact with it, it has large volume (rather than value) and many headline-grabbing innovations (not necessarily related to business value) take place in this space.

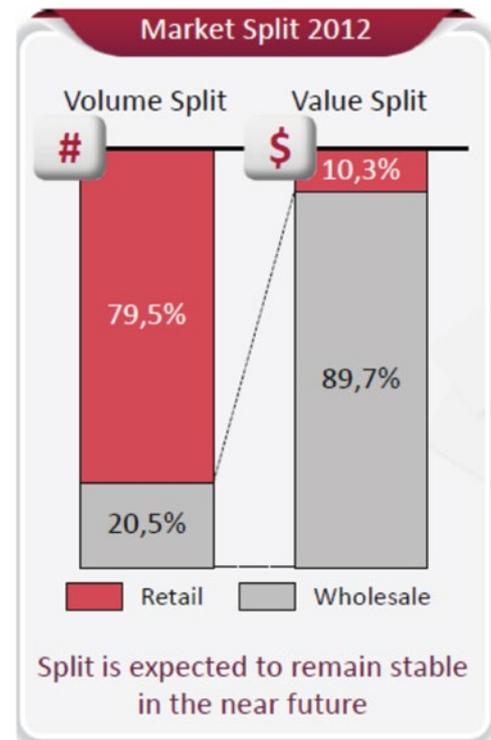


Figure 6 Wholesale payment value is much bigger than retail

Source: Capgemini and RBS (2014) 'World Payments Report 2014', available at: <https://www.uk.capgemini.com/thought-leadership/world-payments-report-2014-from-capgemini-and-rbs> (accessed 20th February, 2017).

Despite retail payment volumes being large, actually almost all business is B2B (supplier-manufacturer-government-consultant-outsourcer etc) with only the final part of the chain being visible to the consumer as business-to-consumer (Figure 7).

The true disruptive business impact of instant payments may turn out to be in the B2B space. Not only because this market volume is much larger, but also because many inefficiencies can truly be solved and business processes significantly innovated in this area.

Examples are:

- Instant payment can make cash management, liquidity management, accounts

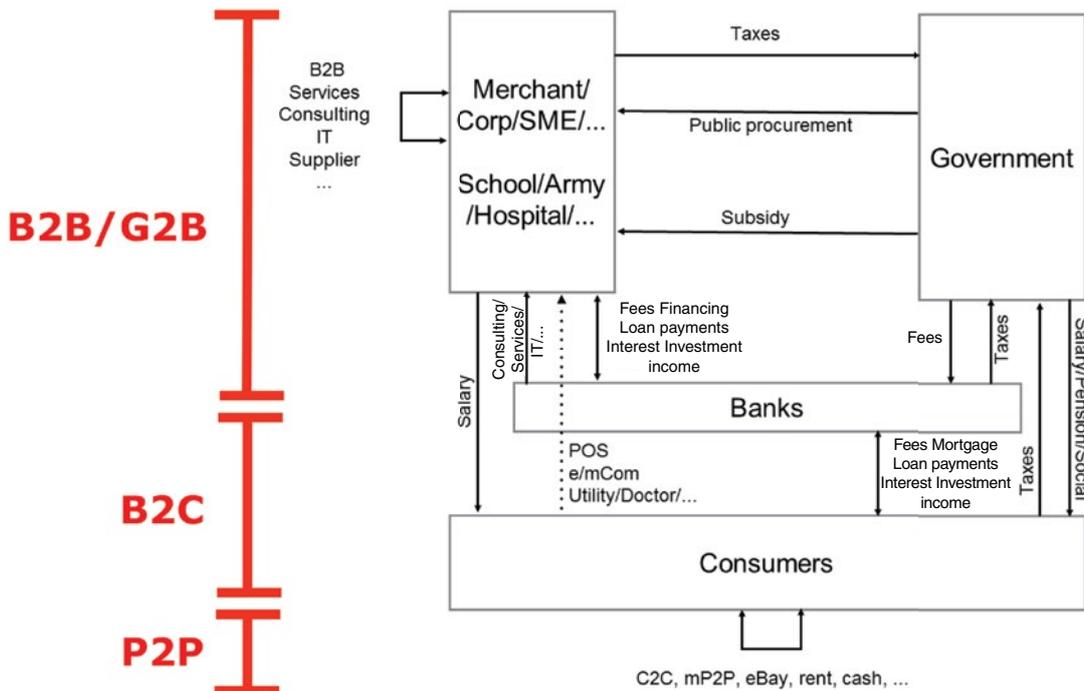


Figure 7 Most payment is in B2B/ G2B space, with the small 'exception' of consumer/retail payment at the end

Source: EquensWorldline Research 2016

payable, accounts receivable and treasury considerably simpler. Instead of planning when payments are coming in, when to have sufficient cash to cater for later outgoings, and when one needs to send payments to make sure they arrive on time, everything is settled instantly. This means much simpler accounts-payables, accounts-receivables and corporate treasury.

- Instant payment can allow for just-in-time payment for parts that are inserted in a production line, just as the parts are delivered just-in-time. This means a massive reduction in complex reconciliation procedures of orders and stock and payment.
- Instant payment can allow invoices to be paid at the precise optimal time, rather than at a time dictated by international and interbank clearing and settlement and cut-off logics. One can pay an invoice late to improve one's working capital position or one can pay early if one wishes to use surplus funds and/or negotiate discounts.

- Wages can be paid at the correct amount when work is done and tax paid correctly and automatically (see above section on B2P).
- Invoices and payments can be reconciled instantly. Ship insurances can be paid instantly allowing the freight to leave the harbour immediately. Truck drivers can pay customs at a border at 2 am and pass through without delay.

With only these few examples it can be surmised that the business impact through instant payments by improving straight-through-processing in industry processes, improving working capital, reducing unnecessary treasury and cash management effort could be truly significant for Europe. B2B may prove to be the surprising winner.

Another reason for an expected push towards B2B, rather than P2P and other consumer services, is that those who provide solutions can charge a good fee based upon

a business case and costs saved — unlike consumer payments.

However, it is important to be aware in B2B — as in many other scenario areas outlined before — that the new business process may in future depend more critically on the immediate payment (once immediate reconciliation, immediate tax payment, instant cash management etc are the norm). Just as the modern physical production line is now more critically dependent upon the just-in-time delivery of physical components (eg a lorry with a batch of critical bolts that is held up on the road can halt an entire car company's production line), so it is critical that the instant payment infrastructure is operated at a high level of service. This is more critical than in the days when payments were in transit for days and the processes assumed this and did not rely on instant settlement. Thus, highly professional, scalable institutions are required to operate the new infrastructures.

Case study: B2B cheques

It is important to note that a new technology or infrastructure (such as instant payment) may not be sufficient to change behaviour. A case in point is the continued heavy use of cheques in the B2B world. One would think that such an inefficient paper-based instrument would have no place in a modern cost, efficiency and business-driven environment, especially as electronic alternatives (automated clearinghouse (ACH) and card payments) have been around for a very long time. Sending money from one business to another electronically is clearly much more efficient, faster and cheaper, and leads to fewer errors than sending a paper cheque with accompanying letter by stamped envelope and manual postal service.

However, it is precisely these imperfections that are an advantage to some business partners. For example, a merchant receiving oranges from Spain has a direct advantage if he pays by cheque:

- he can sell the oranges before the cheque is cashed (and thus pay for the materials with the revenue, using cheque processing delay as a means of credit); and

- the driver of the lorry can return immediately back to Spain with the payment/cheque in hand (an integrated process, usually obviating any need for later demands/reconciliations, and there is no need to trust that buyer has transmitted the money electronically).

Even if some of the oranges have rotted in transit, the merchant can agree on a reduction with the driver, issue the cheque for an agreed lower amount or at least partial pre-payment and both have completed the transaction with fewer later disputes.

Examples of the dimensions of B2B cheque payment in Germany (a country normally noted for its focus on efficiency) include the following:

- a single bank saw a single national merchant issue 20,000 such cheques for precisely the above reasons in 2015; and
- in 2014, 29.7million cheques were issued in Germany, with a total value of €189bn.⁶⁰

In the USA a total number of 5.9 billion cheques were issued for B2B in 2012.⁶¹ Meanwhile, another report⁶² found that a typical US business makes half of its B2B payments by paper cheque.

Thus, even by providing good alternatives (electronic ACH payments, let alone instant ACH) other hurdles must be examined and eliminated by process improvements (e-invoicing, supply-chain financing, purchasing cards or solutions from Dwolla etc) to increase the efficiency of payments.

A new technology or infrastructure is not enough.

SUMMARY

This paper has shown that an instant payments infrastructure can have benefits well beyond person-to-person payments (see Table 1) and simply completing old processes more quickly.

Although some questions remain about Europe's focus on infrastructure rather than services, instant payments have the potential to catapult Europe ahead with new innovative services which were simply not possible before the advent of instant payments. This may prove to be an internationally competitive edge for Europe.

Table 1: P2P, P2B, B2P and B2B payments

	<i>From Person</i>	<i>From Enterprise</i>
To Person	<ul style="list-style-type: none"> • friends & family • emergency payment* (for use at ATM, POS) • window cleaner/babysitter • split bill • eBay(*) • P2P lending • used car* • drugs/shadow economy • ... 	<ul style="list-style-type: none"> • payday lending(*) • insurance payout(*) • social benefit* • refund • (wages) • ...
To Enterprise	<ul style="list-style-type: none"> • taxi/restaurant + tip • lottery • spontaneous insurance* • vending machine* • late bill/tax payment* • brokerage* • film on demand/software download* • web merchant/in-app • bill payment • top-up pre-paid card/ewallet/mobile minutes* • POS • instant gambling & payout • (charity) • ... 	<ul style="list-style-type: none"> • JIT production line payment + M2M ... • immediate ship insurance cover • truck pay customs duties/toll • instantly at 2am at border • real time treasury, liquidity mgmt & cash pooling • pay invoices at optimal exact time • ...

Source: EquensWordline Research 2016.

Note: (*) denotes use cases where guarantee is not sufficient but true immediate availability of funds are required.

A brief *tour d'horizon* across P2P, P2B, G2P etc reveals that each sector has opportunities for innovation due to instant payments. Maybe the biggest benefit will come in the B2B sector.

In no way does this paper claim to have given a complete overview of all possible new use cases, scenarios and solutions. It also does not claim to provide all the pros and cons of each idea nor to show the often significant complexities in making them happen. The main goal of this paper is to widen the debate to show that the ECB/ERPB's pressure on Europe to develop instant payments may be well justified and that the new benefits will likely extend well beyond just mobile P2P payment.

Notably, this paper does not cover the undeniable large complexities, risks and threats especially for the banking industry in the face of these developments. It should never be assumed that all this will be easy.

Instant payments' interdependency with other legislations (especially PSD2, PAD, SEPA and the General Data Protection Regulation) was briefly discussed to show how smart combinations may yield yet further benefits. The *Gestalt* phenomenon that 1 + 1 may equal more than 2 also applies to legislation.

Many other topics could not even be touched upon, for example, the emergent field of machine to machine (M2M) and

internet-of-things which will surely also yield new use cases for instant payment in the years to come.

Thus, it is hoped that despite many deficiencies and many topics having to be touched upon only very lightly, this text may stimulate the discussion in Europe on where our joint journey in payments may take us in the future. It promises to be an exciting time.

Key takeaway messages are provided below:

- On European policy for innovations:
 - Success — both in commercial terms and in added value to consumers — will surely come from a plethora of applications. Infrastructures can, at best, be enablers.
 - The case is not easily made that countries which have invested in instant payments have forged so far ahead in payment and e/m-commerce to justify that it has been a good investment.
 - Indeed, there is a risk that the main effect of large European infrastructure investment could be to create a highway for US giants like Amazon and Netflix to glide even faster and more efficiently across Europe.
 - Thus, policy makers face the hard question as to whether it is wise to mandate huge new infrastructure projects upon Europe.
 - Infrastructure can not be *l'art pour l'art* but must only be engaged in to add value to consumers and businesses and to let new services flourish. This, not infrastructure alone, will create jobs and growth.
 - It may have been wise to invest in infrastructure in the past, but this paper recommends that the European policy focus should be (a) henceforth on the development of services and (b) based on concrete evidence to support any major investments.
- On applications of European instant payment infrastructure:
 - Let it not be said — as it often is — that mP2P is a niche, provides little benefit, has little demand and that no one can make any money out of it.
 - As an application, mP2P is a good first step but hardly the only benefit of instant payments. Instead, it is the beginning of a whole family of new services (FX, cashless remittance, P2P, P2B, G2B, B2P, M2M, novel POS and alternatives to ATMs — and much more).
 - Some applications will simply be faster versions of what is done today. Really, new value-adding solutions will enter fields that were previously not possible before the advent of instant payments. Examples are instant insurance, payday loans and more.
 - Combining instant payments with the creativity of third-party payment development unleashed through PSD2 we will surely see innovative solutions well beyond financial services (ie payments, loans, insurance etc) that cannot be imagined today.
 - The true disruptive business impact of instant payments may turn out to be in the B2B space.

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- (5) Some countries (eg Brazil) have implemented instant payments to counter hyper-inflation

- (if money can take days to move it will lose significant value in transit); some as part of national policy measures (eg Sweden's campaign to reduce cash by making electronic alternatives available); some due to national regulatory pressure to improve banking service (eg the UK); some to defend against encroaching mobile operators (eg Nigeria); some simply to modernise their legacy systems and to employ modern technology etc.
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- (52) Similar to the 'innovation' proposals for cheque imaging/cheque truncation which again only serve to perpetuate outdated, inefficient, paper-based payment instruments by marginally reducing their friction rather than truly innovating.
- (53) An industry that has made negative headlines due to astronomical charges (1,500 per cent APR) — but that topic is well beyond the scope of the present paper.
- (54) Again, no guarantee or promise of payment is sufficient.
- (55) The hotlines of banks run wild if benefits/pension payments due at 12 noon do not appear by 12.05.
- (56) The gambling/lottery industry is particularly beset by fraud. Common protestations following failed gambles include 'it wasn't me' and 'I didn't put the money on red'. With instant payment, there is no revocability and hence no possibility for such fraud.
- (57) However, as outlined before, the days of the wallet are numbered once PSD2 allows third parties (eg Starbucks) to connect directly to bank accounts. Then, no intermediate wallets are necessary; this makes life much simpler both for the merchant and the customers.
- (58) Pope, T. W., Ender, P. T., Woelk, W. K., Koroscil, M. A. and Koroscil, T. M. (2002) 'Bacterial contamination of paper currency', *Southern Medical Journal*, Vol. 95, No. 12, pp. 1408–1410.
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