DIGITAL PAYMENTS PLATFORMS

New types of transactions and ecommerce services are being enabled by innovative fintechs.

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Malcolm Borthwick (MB): Hello and welcome to the second day of Disruption Week. Thanks for joining us. I'm Malcolm Borthwick, editor of Intellectual Capital at Baillie Gifford. During Disruption Week we are looking at four sectors which are going through transformational change, agriculture, healthcare, mobility or transportation, and the subject of this webinar, which is payments, or more specifically, digital payments.

Looking back over history, the earliest forms of money transaction can be traced back to ancient Mesopotamia in ancient Egypt over 4,000 years ago where lumps of metal were exchanged, usually silver and copper. And if you look back through history, the most common forms of money exchange have been coins and banknotes. But these are in decline, a decline that's been hastened by COVID due to our reluctance to exchange banknotes and coins for fear of passing on the virus, something which is borne out in the statistics.

If we look at the statistic over the last year, for example, global e-commerce payments are up 19% at $4.6 trillion. And if you look at point-of-sale transactions and cash, cash accounts for 21% of point-of-sale transactions. That's a decline of 32%. So almost a third. And we've seen massive changes over the last year.

In some countries, thousands of ATMs and bank branches have closed down. We've seen the continued disruption of legacy payment systems by new payment infrastructure companies. We've also seen the growth of buy now, pay later companies, probably at the expense of credit card companies, something that we might come back to later in the webinar. And we've also seen the continued growth of digital or mobile payments. Once niche, these are now mainstream. We've even seen one country, El Salvador, adopt Bitcoin as a legal currency. So there's plenty to talk about.

And to discuss some of these topics, I'm joined by Gemma Barkhuizen in our studio here in Edinburgh. And if you joined us yesterday, I'm glad to say the weather's a little bit better and the topic is different. Gemma's here to talk about payments. Gemma, thanks for joining us.

Gemma Barkhuizen (GB): Thanks Malcolm, and also thanks to everyone who's joining remotely to watch this today.

MB: Thanks Gemma. The structure of the webinar will be 45 minutes. Gemma will set out the case for payments for the first few minutes. We'll have a discussion after that, and then we'll open it up to questions from you, the audience. So we'd really like to hear from you if you do have questions. And if you have questions, please use the Q&A function which you can find just at the bottom of your screen. And we hope you'll have lots of questions.

But we thought we'd start with a poll on a topic that divides opinion. So the poll topic is, when will cash become obsolete? Obviously, no right answer here, just interested in your views. Could it be ten years, 50 years, or an extreme case, never? So if you could pick one of those and we'll come back to that later in the discussion. But we'd like to start the discussion with Gemma. If you could set out the case for payments and disruption, in particular maybe looking at some of the new payment infrastructure companies.

GB: Yes, thanks Malcolm. So the rise of digital payment is at its simplest a story of the disruption of cash as people pay through alternative methods. And I really like this tailwind, because it's proven itself incredibly durable. The networks of Visa and Mastercard have been facilitating non-cash payment for half a century and have created close on $1 trillion in market cap between them.

Yet despite all this progress and this value creation, the total sum of consumer cash payment remains in the order of $15 trillion. And that mammoth number really underscores the size of the opportunity for companies that grow through the disruption of cash. And I think that we're going to look back on the pandemic as a historic turning point in the shift away from cash, because we saw a decline of cash payment by about a third, as you've already mentioned, with no expectation of a rebound. And to put that into context, that amounts to about half a decade of change packed into a single year.

Now, I think most of us don't pay very much attention to these changes. We probably don't notice them, because let's be honest, payment is kind of boring, right? It's a means to an end. We only really notice it when it doesn't work. When there's a small café that maybe doesn't accept Apple Pay or when we're trying to buy something online and the transaction just persistently fails.

And so what we might not realise is that the complexities involved in making payments have meaningfully increased over the past decade or so. And the only reason that we don't face more frequent frustration with failed payment is because a set of companies have stepped in to solve the problems along the way.

Now to set the scene a bit, this increased complexity involved in payment is a side-effect of e-commerce, which is very underappreciated. For example, e-commerce requires more frequent transaction with consumers outside of a single geography. But the problem is that the landscape of payments is very locally specific. So consumers will pay differently in Germany than they do in Sweden, and in turn differently in the US and Kenya and so on.

At the same time, ecommerce means that businesses have to transact with their customers across an increasing number of channels. So from in-person to desktop to mobile. And in the background of all of this you also have just a proliferation of mobile payment methods that are being adopted in the shift away from cash and in replacement of cards.

And all of these things add up to a cocktail of cost and complexity that merchants have to navigate. And the incumbent payment service providers have in many cases not been able to really offer adequate help, which has opened the door for a new breed of payment service providers that we've invested in across a variety of Baillie Gifford portfolio as one way that we gain exposure for our clients to this disruption that is happening in the payment space.

So Stripe and Adyen are really the poster children of this new breed of payment service provider that are built from the group up to handle payments in a world of online commerce. And this has allowed both companies to win a really impressive portfolio of online businesses as their customers.

And I actually think of both Adyen and Stripe as unsung heroes in the background of a lot of the innovation that we've enjoyed in online commerce over the past few years. A great example of this in action was Netflix's ability to expand into more than 100 countries overnight a few years ago, which would have been impossible at that speed had it not been for Adyen handling their payments.

And so when I think about the sheer size of the consumer payment market, and I think about the fact that Adyen and Stripe are meeting unmet need within that market, it gets me really excited about the growth opportunities of both of those companies. But what's maybe even more interesting, is the fact that the growth opportunity and the disruptive opportunity here extends even beyond payment.

So Stripe in particular, is shaping up to be a much broader platform enabling companies of all kinds to experiment with forays into fintech. So just as Cloud computing turned software costs from capital outlays into operating expenses, enabling this flexibility and growth within the software market, Stripe is turning the cost of building fintech functionality from capital outlays into operating expenses. And that's enabling this blossoming of fintech activity that we're seeing in industries that historically had nothing to do with financial services.

Shopify is maybe the best example of this. This is another Baillie Gifford holding, which it's an e-commerce software platform, which partnered with Stripe originally to power its payments. But it's taken this a few steps further to leverage Stripe's platform now to be able to provide the merchants on the Shopify platform with business bank accounts and with capital.

And so in this way you see what was an e-commerce platform turn suddenly into a financial services provider. And in that sense, Stripe as the platform powering this, is something analogous to the Amazon Web Services, but for fintech. So while the disruption is starting with payment, it doesn't seem like it's ending there.

MB: Thanks, Gemma. You talk about Adyen and Stripe as the unsung heroes. What's really interesting is the backstory by these founders. On your screen you can see the founders. On the left you've got the two founders at Stripe, and then on the right you've got one of the founders of Adyen. Maybe if you could tell me more about their backstory.

GB: Yes, what's quite interesting is that the origin of both is actually European. So Stripe was founded by two brothers, Patrick and John Collison from Ireland. It's since become substantially an American company. But Patrick and John were, I suppose, distinguished initially just by being incredibly smart, always a nice characteristic in an entrepreneur. So Patrick left high school early to go to MIT, as you do. And in their early 20s they founded Stripe.

And it was interesting because conventional wisdom was that they would fail. Payments has been seen as an industry where the scale players will win, and the assumption was that there really wasn't a new or unsolved problem that needed to be addressed.

But they bucked the odds, because they realised in founding Stripe that there were a lot of unsolved problems that needed to be addressed in a world of online commerce, which the existing payment system hadn't been built to accommodate. And so it was a real milestone that last year Stripe actually processed more payments than the entire e-commerce industry did a decade ago when the company was founded.

Adyen for its part is a Dutch company. It remains based in the Netherlands. And it was founded by the CEO, Pieter van der Does, along with his co-founder who has since left the company. And both of them had a background in the payments industry. And so they were able to realise that it really wasn't built for the increasing complexities that merchants needed to deal with, and so they built Adyen to solve for that.

MB: I think Adyen's really interesting as a European company. And obviously we have ASML, we have Spotify based in Europe. But is it a positive sign in the sense that European companies can still succeed at scale?

GB: I think so. And I also think it's worth emphasising that Adyen's European origins are not at all incidental to its success, actually. Because the European landscape, even before e-commerce became a big addition to the complexity in the space, was incredibly difficult for merchants to navigate, because as I mentioned earlier, the landscape of payment is very locally specific. So in each individual European country, consumers pay in a lot of different ways.

But businesses like to service the whole EU. And so Adyen was actually born to solve for that complexity in Europe. And the fact of having cut its teeth in the most difficult, most natively complex market, made it then very easy for it to grow into comparatively simpler markets. So it started its expansion in the US chiefly to help businesses accept alternative payment methods from other geographies, and since has grown from there to win domestic business as well.

MB: I find this interesting because I used to work for a global payments bank and the complexity, like you say, is absolutely huge. Some of these legacy payments banks were trying to bring together not just dozens, but hundreds of different systems. Does the sheer complexity make it difficult for the incumbents here to succeed, which is why the ones from outside probably have more of a chance?

GB: I think so, because companies like Adyen and Stipe were built from a blank sheet of paper to address this new set of payment problems, to solve for those, to address a world of online commerce. Whereas as you're suggesting, what has happened with incumbent payment service providers, is that the way they've grown, for example into other geographies, is they've done this through acquisition.

And so they end up with this patchwork of technology, which by the way, shows up in authorisation rates. And so it really has made it quite difficult for them to be able to match the proposition of Adyen and Stripe. They would kind of have to start from scratch themselves, and that's a very, very difficult thing for any business to do.

MB: And the likes of Stripe and Adyen have huge amounts of data. How valuable is that data and how are they using it?

GB: I think what's important to appreciate in this new world is that software payments are networked. So what this means is that when Stripe is serving an individual merchant, the service that that individual merchant gets is enhanced by all of the datapoints that Stripe has from all of the merchants on its platform. Which means that your authorisation rates, your fraud detection, etc., all of that is improved by the growing scale of the Stripe network. So there's a kind of collective intelligence that can be embodied in the service that you get. And that wasn't previously true.

The other thing that is helpful in terms of access to this payment data is that it's one of the things that's made it possible for these companies, as I mentioned, to be able to extend beyond just core payments into more financial services. So Stripe Capital, for example, is benefitting from the access to payments data to be able to see the health of a business very easily. And as a result, to be able to see, to be able to quickly offer in a really low-friction way, a working capital loan for example, without the arduous application process and all of that that is involved.

But I think maybe the area of broadly payments where data is proving most valuable and most interesting in terms of how it's being used, is probably in buy now, pay later or point-of-sale credit which is disrupting credit cards.

MB: That's interesting that you mentioned that, Gemma, because I'd like to just bring up something, which you can see on your screen now, which is the global e-commerce payment methods which you can see. And those show quite a big increase in buy now, pay later. So if you look at 2020, 2% as a projected global e-commerce payment methods for buy now, pay later expected to double, to increase to over 4% in 2024.

And you can also see what you're saying about credit cards there, just below digital and mobile wallets, expected to decline from 22 to 20%. It's interesting seeing that big growth in digital and mobile wallets. And the source there is The Global Payments Report, which is from Worldpay. Just to go back to Adyen and Stripe. Can they coexist together?

GB: Yes, we think so. This is why we invest in both of them. There are a few factors to consider here. The one is that the sheer size of the market is just so enormous that both companies have so much room to compete with the incumbents before they have to start encroaching on each other's turf. So the payment market, just consumer to business payment market, outside of China is around $35 trillion. So they have single digit penetration of that. That leaves so much room to run.

And at the same time, the other thing that's helpful is that they do have slightly different focuses. So the commonality of both companies is the fact that they've built from the ground up to address the world of online commerce. But Adyen has chiefly been doing that, focusing on large enterprise customers with the most complex payment needs. So usually multinationals.

I mentioned Netflix, but they also handle payments for Spotify, for Uber, for Booking.com. These companies that have inherently very complex payment requirements. Stripe for its part has been focusing more on start-ups, and specifically online start-ups. And really more broadly than just payments, it's trying to be a platform that's lowering the barriers to starting a business online.

MB: And how is the picture different? Is it different in emerging markets?

GB: Yes, emerging markets. This is one area where emerging markets are actually quite far ahead of a lot of their western peers in terms of the adoption of digital payment. And what's in the background of that is that the internet took off in many emerging markets, China being such a good example, before there was a highly evolved or mature card payments infrastructure.

And so what that meant was that in many emerging markets, companies that wanted to build e-commerce businesses, or indeed social media companies, that wanted to enable transactions between the users of their networks, they actually had to build payments functionality themselves in order to be able to adequately handle that. Because they didn't have the most logical partnerships that were available to them in terms of existing infrastructure that they could leverage.

And so as a result, what you see in chunks of Latin America, in much of Asia, is that the leaders in the payment space, specifically the leaders in the digital payment space, very often are your large e-commerce companies or social media companies. So in China we have these obvious examples with Alipay and

WeChat Pay. Alipay having grown out of Alibaba, the e-commerce giant. WeChat Pay having grown out of Tencent's social media, WeChat.

And similarly in Latin America you have Mercado Libre, the e-commerce giant that is now a robust financial services provider. So it started with payments. It offers loans to consumers, to businesses. It has an asset management business. And this adds on a lot of growth to that company.

MB: It's great to talk about Latin America. Not something that we talk about much. You've talked a lot about first order, second order, third order effects, which I find really interesting, because it's important not to underestimate the effects of these payment infrastructure companies. So tell me maybe about some of the second and third order effects. I'm thinking here maybe of Shopify probably a little bit more, and how it enables a lot more maybe smaller to medium sized businesses and entrepreneurs?

GB: Yes, Shopify is really, the way I think about it is as this great leveller that enables a business of any kind to be able to operate an online store and to be able to do that while controlling its brand itself, controlling its relationship with its customers itself. Rather than, that moves away from a world where in order to serve customers online, you have to go through one of the big aggregators like Amazon. That's no longer true. You can just open a Shopify store.

And thanks in no small part to Stripe, that makes it almost trivially easy for you to start operating an online business, which enables a blossoming of entrepreneurial activity. But it's also interestingly even proven important for larger companies, that are maybe struggling to adapt to the world of online commerce that have been competed with by the likes of Amazon. They now have this way that they can adapt and become e-commerce companies themselves as well.

MB: And we'd be remiss if we didn't talk about cryptocurrencies as well. Where do they fit into all of this, Gemma?

GB: Yes, so I'll focus on Bitcoin as the most scaled cryptocurrency and put questions about the asset and its valuation to one side, given I am an equity investor. And also given that I think what's more interesting here is the Bitcoin network and its ability to have impact across a really broad range of financial services.

So I think about the Bitcoin network as potentially the next leg of disruption here, because it can enable quite a lot of the cost and complexity involved in payment to be reduced, but in a completely different way. And so as a result, I think it's important to pay attention to companies that have been leveraging the Bitcoin network to build financial services.

So we have been doing that with our unlisted investments, really keeping abreast of that. And we have made investments in the space, for example Blockstream, which is a company that operates a software project called Liquid which has as its ambition to rebuild capital markets on top of the Bitcoin network. No small task.

And we like this company because the founder and CEO, a man named Adam Back, is a highly respected cryptographer. And as a result of him being at the helm of the company, they've really been able to attract a lot of the best minds in the Bitcoin space. And so beyond seeing the upside for the company, we also think it's really helpful to have these kinds of investments as a way to learn about this new disruptive technology that can have an impact also on other holdings.

MB: And I wanted to come back to the poll now before going to some of the audience questions, because we've had lots of questions come in. So interesting to get people's views on when, and indeed whether, cash will become obsolete. So in ten years' time, roughly half there. And then evenly split between 50 years and never, a quarter each. What's your view, Gemma?

GB: I think the poll is interesting, because it's an example of what we've seen over and over again. So historically, we tend to overestimate the pace of adoption of new technology and we tend to underestimate its impact. So because of that, I wouldn't be in the camp of thinking that in ten years cash is going to be gone. I think even on a 50-year view, I think it's probably going to be more, how do I put it, more like a critically endangered species than it will be extinct.

But what's important, I think, to appreciate in terms of this increasing marginalisation of cash, is that it's a technology like any other. Cash is a technology. And it can be competed with and outcompeted like any other. And we are seeing already countries like Sweden or many cities in China, where cash has already reached that critically endangered status.

MB: Thanks, Gemma. I'll go to the audience questions. Thanks so much for sending in your questions. There are lots coming in. So could you talk through where Visa and Mastercard fit in the payment process with Stripe, the purchase banks, and also the merchants, Gemma?

GB: Yes, it's a good question. I think that very often when we talk about all of this innovation in the payment space, in a sense it would be remiss to not mention Visa and Mastercard, because it would really be a shame to downplay what those companies have achieved. They have some of the strongest network effects of any businesses ever. When we think about network effects businesses, we usually think about Facebook. But Visa is a better example.

And so in terms of where they fit in this picture, Stripe and Adyen, I won't get overly complicated here, but Stripe and Adyen provide an acceptance layer for the merchants, but they need to hook up to the Visa and Mastercard networks. And so their growth is still good for Visa and Mastercard, is the short answer.

I think where the Visa and Mastercard story perhaps becomes a bit more complicated, thinking about this disruptive picture, is when you have closed-loop payment methods that are being adopted by consumers that don't require you to be funnelling funds and settling through the Visa and Mastercard network. And this is also an area where Bitcoin payment or cryptocurrency payment is heavily disruptive to those companies.

MB: Yes, and Visa, like you say, is an absolutely fascinating company. Dee Hock, its founder, was transformational. I wonder if we're going through almost the same inflection point now than we did with Visa?

GB: It's an interesting framing. I think, as I said, Visa has these really powerful network effects, and that's something that this new breed of payment service provider at least, don't have. But what is more dramatic than this Visa disruption is the fact that, as I mentioned, this new breed of payment service provider are extending beyond just payments.

Because they're software companies, it's relatively easy for them to do that. So to then extend into offering business management software, offering analytics, being able to use that data to help merchants to understand the transactions of their customers. All of these things can be quite meaningful. And by contrast, Visa kept its arena of impact constrained to payments, by contrast here.

MB: We got a not a dissimilar question to the one that came earlier, but it mentions PayPal, in terms of how PayPal fits into the Adyen and Stripe kind of metrics of whether it does or it doesn't fit in there?

GB: So if people are paying with PayPal, then it adds to this complexity that you have that companies like Adyen and Stripe exist to deal with. Where a merchant needs to be able to accept multiple different payment methods, it needs to be able to realise that it can't insist that its customers pay in just one way or two ways anymore, because people are going to have different preferences. And so if people are paying through PayPal, that in a sense adds to that complexity that is a tailwind for these companies.

MB: And we've had a question that's come in, just about one of your, you mentioned earlier about unlisted companies or private companies, and whether or not at Baillie Gifford we look at investing in private companies different from maybe listed companies. How do you look at that from an investment perspective?

GB: That's a really good question. The way that we see it really, is that the IPO or the direct listing, or however you choose to come to market, there's an increasing range of ways you can do that these days, it's relatively arbitrary. It's a liquidity event. It's not definitional. So a company, whether it is listed or unlisted, is for us the same unit of analysis. We think about our unlisted investments exactly the same way, as a result, as we think about our listed investments. Really with that discipline around looking for the large payoffs that we can invest behind for our clients.

MB: So what are you looking for in management teams? What type of differentiation are you looking at, whether it's culture or other things?

GB: Yes, that's a good question. I think specifically in this space, there are two things that I would highlight, with the caveat that this is never exhaustive. The one would be an inherent adaptability and willingness to keep abreast of technological change and even to potentially disrupt oneself.

Because this is such a fast-changing market, because there is so much technological change in this market, it's really helpful if we can…We're really encouraged if we see management teams are not putting their heads in the sand, but are actually trying to actively think about how might new technologies that are emerging, which could disrupt them, how might they actually be able to use those. So that's the one thing.

The other one I would say is a kind of customer centricity. And oftentimes the customer here is the merchant, it's the business. But the reason this is important is because one of the things that can make payment service providers in particular, if I focus there, one of the things that can make them valuable businesses is that the switching costs in this industry can be quite high, provided you're offering a good value proposition.

So the incentive for a merchant to shift their business away from an Adyen or a Stipe and shop around when new competitors come on the scene, that incentive is very low, provided Adyen and Stripe are sufficiently focused on delighting their merchants, giving them a good value proposition, and never becoming complacent around that. So having that customer centricity, that lack of complacency, I think is really crucial in this market.

MB: And maybe some of the legacy banks have become complacent, which has allowed Adyen and Stripe in.

GB: I think in broad range of ways, the legacy banks have exhibited this complacency, and also this perhaps head-in-the-sand attitude that I described, in terms of not keeping abreast sufficiently of the technological threats and opportunities in the space.

MB: This is really interesting. How do the likes of Adyen and Stripe avoid being disrupted themselves? Do they set up separate innovation units within their company, or how does that usually work? Because often we see the competitive threat coming from outside, but how can companies protect themselves against that?

GB: Yes, I think a really crucial ingredient in that protection is time horizon. So Adyen is such a good example of a company that is aligned to the time horizon that we have when we're investing. And this allows them to remain innovative, it allows them to keep pushing the envelope in what they're offering. So that company builds, they make investments today that they explicitly only hope will pay off in ten years' time. And they're completely agnostic to the movement of the market in the interim, to what happens in each quarter's earnings, and that sort of thing.

They're really building this business for the long term. And they've seen those investments pay off in the past. And so as a result, it can be quite an analytical challenge, because if we have a sense of, if we think that we know for certain what Adyen's portfolio is going to look like in ten years' time, we will almost certainly be wrong. But what we do know is that the company is going to continue to expand, it's going to continue to improve its value proposition because it has that disciplined long-term time horizon, which is extremely rare.

MB: Yes, that's interesting. I was reading that Jeff Bezos, he used to get frustrated about dealing with things in the now, because he was so focused on dealing with things five or ten years down the track. So we've got a question here which I think with your answer you can probably take anywhere. We've come a long way from precious metals, cash, credit cards, and now to digital payments. Do you think we can advance even more in the future, and if so, where?

GB: I think this is one area where the potential inherent to blockchain as a new computing paradigm, just think of it that way, I think this is one area where the potential inherent to that is very interesting. Because the inherent capabilities of blockchain as a new computing paradigm allow new things to be done that couldn't be done before.

And one of the things is that it means that money, for the first time, can be programmable for specific use cases, for being able to spend only on a specific thing at a specific place, for example. It's not clear that that would always be positive in terms of the directions it could be taken in, especially if you see adoption more of central bank digital currencies rather than decentralised digital currencies, because it can become a mechanism for perhaps state control.

But certainly to the spirit of the question, there is so much that can be done that couldn't be done before, because you now have money that is programmable. And I think if we look back on disruptive technologies in the past, if you think about smartphone adoption for example, you think about the PC. It goes back to this point about how we underestimate the magnitude of impact. It's very difficult at the time of adoption to say, this is what this is going to mean, this is how people are going to use it.

When the smartphone came out, you wouldn't predict Uber as an outcome of that, but Uber was an outcome of that. And so now you have programmable money. What will be the outcome of that? I honestly don't know, but I think it could be very exciting.

MB: And we've had, and you alluded to this earlier actually, when you were talking about Stripe, what do you see as the barriers to entry into the payments market?

GB: Yes, it's different in different segments of the market. I like the entry barriers on the payment service provider side. I like the entry barriers, I would say, less on the consumer payment side, so digital wallets and so on. Chiefly the entry barriers on the payment service provider side are scale. There are meaningful economies of scale in this industry, and those are actually becoming even more meaningful as you have to have an increasingly diverse geographical footprint just as table stakes.

And the other one is the switching costs, which I mentioned. Payments are mission critical. If Netflix all of a sudden can't accept subscription payments, that's a huge issue. So as long as Adyen and Stripe continue to provide a good value proposition, they continue to provide the best authorisation rates, the best fraud detection, the best value-add around beside, which they've been very good about, then the incentive to switch is very low.

MB: Great. And thanks for the questions that continue to come in here. One is about Mercado Libre, which you touched on earlier. And it's not, I guess, it's not just Mercado Libre. There are probably other companies that we invest in on behalf of clients that you can ask similar questions about. The question is, is Mercado Libre stretching itself too far by entering into financial services?

GB: I don't think so. I think, so the financial services opportunity for Mercado Libre is one of the most exciting parts of that investment case, to my mind. It adds on a meaningful chunk to the upside. And again, let's bring it back to the context, they essentially had to enter the payment space in order to make their e-commerce business work. And from there they realised that the financial services opportunity was so much broader.

Brazil for example, which is one of their core markets, is the region where the incumbent banks have the highest credit spreads in the world. So to disrupt that with a lending business that can be fairer, is a massive opportunity. So no, I think it's a really exciting part of the case.

MB: And if you could maybe explain credit spreads and the importance of them a little bit?

GB: This is really just gesturing at the point that that region, if customers want to, if consumers want to access credit, or indeed if businesses want to access credit in order to pay for things or to build their companies, it's very, very expensive for them to do that there. It has been historically very expensive for them to do that there. And Mercado Libre is just making that cheaper.

MB: And I've got a question here about regulation that's come in. Could payment providers be subject to increased regulation, and could this be a risk to their business model?

GB: So regulation has actually been a great tailwind for Adyen in particular. Let's come back to this point about complexity, complexity, complexity. The harder this market becomes to navigate, the more value they can provide. And so in that sense things like PSD2 in Europe and so on, that's been really helpful for them because it just adds on this, okay, now you have two-factor authentication. All right, now we have to deal with this. How do we deal with this? Okay, Adyen can deal with this. That's kind of the role that they fulfil always.

So in that sense, it's actually been a tailwind for the payment service providers rather than an issue for them. I think though, that perhaps the spirit of the question is also more broad than just thinking about the payment service providers. And certainly, there is a regulatory overhang. There's regulatory uncertainty facing a lot of the disruptive technologies that are being adopted in the space. Cryptocurrency is just an obvious example of that.

MB: And I think we might have time for one more question here which is an interesting one. Do we think that buy now, pay later companies will replace credit card companies in the long term?

GB: I do, actually. And the stats behind this are very supportive of that. And one of the things, I think, that supports this is just demographics. If you look at younger consumers, they don't trust credit cards. Their adoption of buy now, pay later methods, or point-of-sale credit, has been incredibly strong. There's very powerful momentum behind that.

And I think that it comes back to the fact that, so let's focus on a company like Affirm, which we invest in in various Baillie Gifford portfolios. We're very excited about Affirm. This company's founder, Max Levchin, who was incidentally one of the co-founders of PayPal as well, really founded the company because he believes credit cards are toxic.

And the reason for that is because they're incentivised to make loans to consumers who are going to struggle to repay, because they earn late fees. It's an important part of their profit. Affirm has aligned itself, in contrast to that, squarely with the interests of the consumer. It hasn't charged a late fee in the nine years of its existence. It never will. So it's just an inherently more aligned, fairer model. And consumers realise that, and so they've been adopting buy now, pay later with gusto. And young consumers adopting credit cards, that's been on the wane.

MB: Thanks very much, Gemma. We haven't got to all your questions, but I promise you we will respond to them individually afterwards. So Gemma, if you were to leave the audience with one idea or thought in no more than a minute, what would it be?

GB: I think that history shows that when you have a collision of technological change with a large market opportunity, then you're in fertile hunting ground for growth. And in the payment space we have that technological disruption, various forms of it. And we have it in the context of a market that might be the largest that I see through the course of my career as an investor. So that gets me very excited.

MB: That's a great place to end it, Gemma. Thanks very much. I really enjoyed our conversation. I hope you the audience have enjoyed it as much as I have. Thanks very much for joining us. And if you'd like to read more about our insights and our thinking into what shapes our investment ideas, please go to the Insights section of our website which you can find at bailliegifford.com/insights. And tomorrow on Disruption Week we're talking about the mobility of transportation, and on Friday we'll be talking about agriculture. Thanks for investing your time in Disruption Week. Goodbye.

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