[SQUEAKING]

[RUSTLING]

[CLICKING]

**GARY GENSLER:** So welcome back. We're going to keep this journey going on FinTech. We spoke about payments in our last class. And here in Class 7, we're going to dive into credit, and there's a lot to cover. There are so many different segments and sectors in the credit space, and there's a lot going on with financial technology, not just because of artificial intelligence, Open API, but even the earlier things that were brought into the tech. Now, technology stack around mobile phones and the like still gives a lot of opportunity to break in here, and the use of alternative data.

So I'm going to bring up-- share some slides and get going here.

First, I should also say to those who celebrate such things, happy Earth Day, April 22. It's also my daughter's birthday, my eldest, my first daughter at 3. So today's a special day, Earth Day and my daughter's birthday. So happy birthday, Anna.

So I'm going to do a little update on Facebook. We spoke about Facebook in our last class about payments. And there were interesting announcements, actually, as we were together. Facebook was announcing some updates. And then dive into the credit world. And before we dive into FinTech, just talk a little bit about those credit sectors and the market designing credit. And that provides, as we'll see, some of the disruptive potential and how disruptive Taq can break into the credit value chain.

What you're always looking for in a business, whether it's about FinTech or otherwise, is somehow to break into another party's value chain or to create value for customers. Either you can create value where others haven't seen it, or you want to break into somebody else's value chain. So we'll talk a little bit about that, how we see that pretty early in this area of financial technology.

And then a review of the competitive landscape by the different marketplaces. I'll touch on marketplace lending and credit scoring, and then I'll close with just a comment on professionalism and academic integrity, as people are gearing up for their papers and group work, and so forth, again.

The readings included a review of 12 FinTech companies. This was just a taste test. It was one article in reaction to Apple Credit Card. And these were FinTech companies in the credit card space. But as we'll see today, we're going to review a lot of the other spaces, as well.

A brief article that I thought was helpful about how tech companies are seeing how to get into the lending business, big tech, particularly. Marketplace lenders, we'll look at Lending Club more particularly, and then alternative data.

Study questions, again, are not just for you to gear up and prepare for the class, but this is where I want to sort of end how we can think about this, really importantly, how big tech firms are positioning themselves to offer credit. And I don't know, Romain, if anybody is going to sort of get the cobwebs off and give us some thoughts, but I'm going to turn it to Romain to see if there's anybody that wants to just give it a thought, broad overview of big tech in this space, whether it's from China, Europe, the US, Latin America.

OK, let's go for today's class. Who would like to be the first volunteer? Michael. Thank you.

**AUDIENCE:** I guess something from the article that [INAUDIBLE] just kind of seeing over the last decade, what's going on, there's been a lot more availability of lending. I think Lending Club was-- I kind of saw it more from a personal investing point of view, but kind of thinking of who can actually have access to credit has been a huge position of tech in the US, and also the speed of the traditional credit process for consumers and small businesses has been kind of painful. So that's definitely a big area that big tech is trying to tackle with AI and just automated processes.

**GARY GENSLER:** Right, right. But Michael, if you add to it, think about big tech companies. How are big tech companies strategically positioning themselves? I mean, Lending Club and the marketplace lenders are a very important trend here, as well, these sort of

more disruptive companies, some of them becoming incumbents in their space. But how about big platforms?

I guess embedding it with their current services, products that they already have. Like, Apple Pay was a good example, where it's just kind of everybody's already using an iPhone, so if they can just make it seamless with their existing processes.

So this is again [INAUDIBLE]-- well, I see a couple other hands up. So, Romain?

**TA:** Alessandro?

**AUDIENCE:** Yeah. I think, also, Amazon is a very interesting case where, thanks to all the data, they have gathered on sellers from their marketplace, they are able to offer short-term lending to all the sellers on the marketplace. And this also gives them a competitive advantage.

These would be banks, commercial banks, first of all. Because the notion of this lending is very small. So it's comparable to microlending. And second, because they have access to a huge amount of data on the business of these sellers. And third, they have a direct accessed repayment. Because basically, these repayments are automatic from the business of the sellers on the Amazon Marketplace.

**GARY GENSLER:** Right. So what Michael and Alexandro have said is-- well, first, we talked a little bit about the disruptors. But in terms of big tech, they have a lot of network advantages, whether it's Apple. And there's so many people that have their phones and their products, whether it's Amazon in the case that-- Alexandro, we can go to other countries as well. This is certainly true in a very significant way in China.

But if it's not just isolated in China and the US is that they have big networks of users. They collect data and particularly if you're a marketplace like Amazon or Alibaba. When you're selling product, you're seeing both sides of a market. You're seeing the consumer side, the hundreds of millions of people in China or the tens of millions of people in the US. But you're seeing the merchant side. And so that data, and that flow, and that activity gives you a natural competitive edge.

And then lastly, what was just mentioned is automatic payment, particularly if you're in an online platform selling something. You see that merchant's payment stream, but also, you lower the credit risk. Because consumers are buying. You take

your piece to pay back, whether it's a revolving or term loan to a merchant. So a lot of competitive edges or even advantages in this space for them to build upon to provide a credit product.

**TA:** Sijin would also like to share a thought.

**GARY GENSLER:** Yeah, please.

**AUDIENCE:** Yeah, I think the case of Alibaba is really interesting. Because just like Gary had mentioned, there are a lot of transaction data and also use their data in Alibaba. So right now, Alibaba not only offer the payment system, it also offer a credit system. You can borrow money from Alibaba. Actually, it has its own credit system that can-- I mean, the credit rating. They can determine how much money you can borrow from Alibaba. So I think this case is fairly interesting.

**GARY GENSLER:** Yeah, so two things that I think I want to tease out of that is the idea of building credit on top of payments. Now, this is not a new phenomena. This goes back centuries that any good banker knew that if you were in the center of payments, you had more information. You had more data, even in a pre-computer age.

But what we find is a lot of the big tech companies as well as the disruptors chose to get into the payment space and then build upon that credit. Now, as it relates to Alibaba, what better way to do that than to provide a payment mechanism to purchase the products on your platform, similar with Amazon?

And then you can build credit upon that. Because you've got an incredible amount of data. But also, you can provide credit in what's called point-of-sale credit. Buy something, pay for it over 6 weeks, 8 weeks, 10 weeks when you're purchasing, so good points. So what is marketplace lending, this phenomena that started out at the United Kingdom?

We'll talk a little bit about LendingClub here in the US, started about a dozen to 15 years ago. What is it in its theory? And where is it right now? Anybody want to chat about that for a minute? LendingClub, LendingTree-- a lot of companies that we can chat about here.

**TA:** Alida?

**AUDIENCE:** Yes, the marketplace [INAUDIBLE] lending instead of the concept of allowing individuals to lend to other individuals or companies through a marketplace. And while they've been around for a while, they've really just come into lending platforms. And they're really supported by a securitization market behind them now, rather than individuals lending on the platform for the most part.

**GARY GENSLER:** Right. Right. And Michael spoke about this earlier as well. I think it's an interesting concept, but that it hasn't actually lived up to its early promise. The promise, when this came about in 2005 to 2007, was that you and I could use the internet to communicate.

And I could lend to you, and you could borrow from me, peer to peer, without a central intermediary. Now, there was always going to be some intermediary. Because there was a platform, a software provider taking a fee, but somehow matching lenders to borrowers in a peer-to-peer network.

What we found over these 13 or 15 years is that the marketplace lenders like LendingClub have shifted to securitization market to raise their money, a highly organized and somewhat centralized market securitization market. And on the lending side, you're still very much saying that you're going through a portal and that there's only so many of these portals.

So it's not that it's truly peer to peer. And in fact, often it's now called marketplace lending in its platforms. I think that it's still a very important part of the disruptive credit landscape, but it's a small percentage of that marketplace. And it's shifting very dramatically from peer to peer to online portals. It's still access centralized credit in many ways.

And we'll see. And we'll chat a little bit about-- LendingClub is even now buying-- announced earlier in 2020 to buy a bank and merged with the bank itself. And then there's already been some discussion of alternative data, but alternative data building upon a history in many countries for four or five decades to use data to make credit decisions by changing it. And I see a hand raised on this, maybe, Romain? Or no?

**TA:** I don't see any hands raised. I'm sure one will come up.

**GARY GENSLER:** Going down. So where does that take us? Let me go back to Facebook Libra just for a moment. And this is where we closed our last class is that Facebook Libra had announced in June of 2019. And then the People's Bank of China had already been working on the digital currency project. But then they sped that up a bit and announced within a month or two that they were going to move forward with their currency project.

Libra had announced a token pegged to four or five other currencies, so is a multi-currency basket. And there was a lot of push-back from central banks around the globe on this concept that they would create what Facebook actually announced-- a global currency for billions of people.

There was concern amongst the G7 and G20 countries, but there was also concern of a broader group of countries developing countries as well as to what this meant for their monetary policy, how stable this would really be, and whether it would compete with fiat currencies in not just a positive way, but maybe a negative way.

And there were also a lot of concerns about whether it would support and somehow become the domain of illicit activity-- drug runners, and the like, and so forth. So Facebook is a big company. They stub their toes from time to time. This might have been one of those times, but it was an innovative project.

So they announced last week some changes. And most importantly for this conversation-- and this is just a slide taken from-- I think it was a Medium post I found. They said that Libra would now be a platform. And they would do single currency tokens-- a euro token, a US dollar token, a sterling token, et cetera, et cetera.

They'll still have a multi-basket, a multi-currency basket coin called Libra. But they'll have what's, in essence, stable value tokens. And they feel that there's still enough opportunity or as what we talked about-- pain points in the payment system that a dollar token, a euro token, a British sterling token, and the like is relevant and an important layer.

What Libra also announced is that they're taking a tiered approach to this whole

topic of anti-money laundering and know your customer. In essence, working with governments around the globe, they're saying they would only work with wallet providers. This would be single currency wallet providers or multi-currency Libra wallet providers.

They'd only work with a digital wallet provider if it was in a jurisdiction that had regulation and those wallets and exchanges, if it was on a crypto exchange were well regulated within those countries or at least regulated and registered within those countries under the guidance around the globe that's issued by the FATF. The Financial Action Task Force is anti-money laundering standard setters around the globe.

And they had said that they wanted to take a tiered approach that would even include on the permissioned blockchain in the protocol layer, in the software itself some protections against sanctions. Now, they didn't say whether it was sanctions that were UN sanctions, European sanctions, US sanctions.

And then you get into some interesting geopolitical issues as to how Libra, the associations would sort through this. But it's interesting. Facebook is not giving up, just because there's a lot of push-back. And for those of you that might watch this online and might watch it in 2021 or 2022-- but this course will have a life for a while, offered online.

It'll be interesting to look back to see what other adjustments at Facebook and Libra, done in '20 and 2021, to continue to meet the official sector and bring this thing to life going forward. Any questions on Libra? I had the opportunity. They actually reached out to me last week after our class. And they wanted to give you a little briefing to your faculty member on this.

**TA:** I don't see any hands raised, Gary.

**GARY GENSLER:** All right. So I'm going to sneak into credit. So what are the credit sectors? I mean, we all know them. This is pretty straightforward-- household sector and corporate sector. But the household sector-- the big pieces. And those of you that took the half semester of consumer finance course remember all this-- mortgages, autos, credit cards, personal loans, student loans. And then you can have sub-sectors.

If you're thinking about disrupting this space, you would think, all right, where am I going to slice into? Am I going to try to do something in mortgages, or credit cards, or where? Am I going to try to go to the high end, the low credit risk super prime? Or am I going to try to be in the sub-prime marketplace?

And these markets are vast. They're vast in nearly every country. So you'd pick and target what you're actually going for and literally whether you're picking debt consolidation or point-of-sale lending matters as well. The corporate sector is interesting.

In terms of fintech, the corporate sector has been disrupted dramatically in earlier decades by the securitization markets. And asset securitizations happen primarily around the household sector. But asset securitization or a way to fund lending through the securities markets has come to the real estate and more recently to the collateralized loan markets or CLO markets.

But in fact, when we really think about these markets, what's been focused on in terms of financial disruption is primarily the household sector. And then I circled the small business and small and medium-sized enterprise. Now, SME, mid-market companies could be defined all sorts of ways.

In the middle of this corona crisis in the US, we seem to have latched on to companies that are less than 500 employees. It's not a specific definition somewhere around the globe. But large enterprises can access the securities markets directly. Large enterprises are, by and large, borrowing from big banks or securities markets.

And the greatest opportunities have really been in the small business or SME market place. And it could be products like cash advance products, purchased credit, working capital lines. We'll get a little bit into this. But again, if you're thinking about credit, it's a vast market. And it's not one to just forget about all the little pieces in there. Romain, I think there were some questions. Sure.

**TA:** Yes, we have a question from Victor.

**GARY GENSLER:** Please.

**AUDIENCE:** [INAUDIBLE] see the point of why [INAUDIBLE] euro, dollar, whatever. The stable dollar already exceeds in the cryptocurrency market. And I even, in that case, fully understand what [INAUDIBLE] with less fees.

**GARY GENSLER:** OK. So, Romain, Victor was cutting in and out. I think, if I understood the question, is back to Facebook and why they have the stable individual currencies, but I'm not certain. I'm sorry. So around the globe, there are definitely shortcomings of our fiat payment systems, these pain points.

Some of it just relates to whether the payment systems are 24 hours a day, seven days a week. In terms of the euro, actually the target payment system run by the European Central Bank does have attributes of 24/7. The US-- we have more challenges in that regard.

But the bigger issue often in payment systems are costs. And so what Facebook Libra is saying is, we can provide something that can compete in this space. But money is already digital Fiat money, the euro is already digital. So Libra and Facebook are not providing that. They're saying this is a different digital euro or a different digital dollar that can maybe move 24 hours a day, seven days a week where you can get instantaneous settlement.

Now, the US Federal Reserve is moving there. And we'll be there by 2023 or '24. And in fact, even in the US, the clearinghouse, as we talked about, the organization of about 24 major banks have it in a continuous real time payment system. Europe is already moving to that continuous real time payment system. So you might say, why would a Libra euro compete with that? Partly because it would be on the Facebook platform.

And the thought is that Facebook would embed it into their system. It's to some extent to try to compete with what Amazon, and Alibaba, and Tencent are doing elsewhere as well. But implied in your question is, so what? Why would this matter? And I think it's a competitive landscape. And time will tell us whether it will really matter. Because we already had digital euros. This would be a different form of a digital euro.

**AUDIENCE:** [INAUDIBLE] of an overlap, I guess.

**GARY GENSLER:** That's right. That's right.

**TA:** And I think, Gary, on the same topic, we might have a question from Luke.

**GARY GENSLER:** It is. Luke?

**AUDIENCE:** [INAUDIBLE]

**GARY GENSLER:** Again, Luke is not coming through. I don't know.

**AUDIENCE:** I'm here. So each question is, what is the main difference between Libra 1.0 and the 2.0? Because 1.0, I believe, was suggesting currency basket. And second question was regarding LendingClub. It's down a lot-- 42% in three months and 93% since five years.

And will it drive during this consumer equity crunch that is the quarantine recession we have now or suffer from high leverage? Because it acquired a brick and mortar bank, which seems untimely these days. And regarding the currency basket, wouldn't it suffer during economy downturns when there's a distortion between safe currencies such as the US dollar, Swiss franc, and the emerging market currency that is R&B or whatever they're really putting in the basket?

**GARY GENSLER:** Yeah. First, let me compliment. I love the Edvard Munch that you have behind you. I assume it's just a visual. But if it's an original, protected safely. To your second question, LendingClub, I think that all of the marketplace lenders have some challenges in the middle of the corona crisis.

I think that their early promise has improved that completely. So you're right that it went-- it's a public company, actually-- LendingClub. It went public. Its stock came off dramatically, 70% or 80%, even well before this corona crisis. Then within the crisis, it's come off some more as well.

It's buying a bank. It's not technically a bricks and mortar bank. That bank, I think, has one location in Massachusetts, maybe in Boston. It's an online bank. And what they're trying to do-- their theory of the case is that they want to lower their

borrowing costs. Because marketplace lenders-- and we'll see this in a moment-- arrange with some banks to borrow money.

So marketplace lenders are from the markets. Some of it's securitized, some from banks. And what they're saying is, we can maybe lower our costs by embedding a bank. Back to Libra, and Facebook, and the like, the main difference between Libra 1.0 and 2.0 are the two that I mentioned. I mean, they would say there's three or four other changes.

But one is rather than only be a multi-currency coin, Libra, they're adding individual coins. They're not getting rid of the multi-currency coin. The multi-currency coin is still there. It's still their aspiration to have a multi-currency coin. But they're adding the single coins to try to give a new euro digital dollar to it.

And secondly, they're adding much more-- know your customer anti-money laundering regimes by saying, look, we're only going to work with digital wallets and crypto exchanges in certain jurisdictions which are registered and following anti-money laundering law.

And additionally, we'll embed in the software some protocols, literally in the software to guard against either sanctions and some other things. Whether this will be enough to satisfy the official sector, yet to be seen. It looks like they're moving first with Switzerland and trying to have Switzerland's regulator, FINMA, capture it and move forward. I'll take one brief-- more question, because we've got a lot to cover, but sure.

**TA:** So Cindy had her hand up for one. If you want to talk, unmute yourself, please.

**AUDIENCE:** Yeah. I'll just ask briefly. But with household private sectors, how are they preventing against predatory lending? Because just through reading some of the articles, it seems like that becomes a gray line when you're targeting specific type of customer who doesn't qualify for traditional loans.

**GARY GENSLER:** So you're talking about more broadly, just in terms of, how do we guard in any country against predatory lending? It's hard. It's hard. The entire credit space has a lot of protections and regulations starting in-- well, I would say starting hundreds of years ago, really. One would even go back to the Hammurabi Code and say there

was regulation of interest rates.

But in the modern days, we embedded-- let's take the US for a moment. Two really important things. One was the Equal Credit Opportunity Act or what some people call ECOA, which was in the late 1960s and then something called the Fair Credit Reporting Act, I think, by 1972. These two came out of an earlier way, the fintech, an earlier wave of credit cards, an earlier wave of lending and directly to this question about whether it was fair and whether it was equal.

Everybody had the same access, Equal Credit Opportunity Act, that you couldn't differentiate because of gender, or race, or nationality, and the like and Fair Credit Reporting, that those credit reports. The things that we came to know and in about 30 countries rely on, is these FICO scores from a company called the Fair Isaac company, that those scores-- we'd have to be able to know something about them.

And if we were turned down, somebody has to explain to us how we were turned down. Well, now, fast forward to 2020. Absolutely. The question is right. How can we protect that we still have equal credit and that it's explainable? And why is somebody turned down?

And once somebody is not allowed to take credit, it gets tougher with artificial intelligence and machine learning. It also gets tougher when there's not a physical location. And thirdly, many of these companies are not regulated or registered as banks. And regulators around the globe tended to look to banks to make sure that these laws were fairly applied. Now, they also look to the credit reporting agencies.

So I think the real answer is in these changing times, the official sector around the globe has to adapt and sometimes change a little bit of who is regulated and even if you're a non-bank, that you still have to comply with some of these things, importantly.

**AUDIENCE:** Thank you.

**GARY GENSLER:** So let me just give you a sense of the size and scope. The household sector-- you can look at this later in the Canvas slides, but the household sector-- grown dramatically. And if you look in the United States, we're no longer the top percent of GDP.

In fact, I think Luke is in Korea now. Your country is now peaked up to be number two. But look at China. China from 10 to 20% of GDP just 15 years ago. And all of a sudden, 50% of GDP. So these markets have grown a lot in many countries. I wouldn't just think about this in the US. And Brazil and India-- I would predict, will grow significantly as well.

Now, in the US, we've got about $14 trillion of household debt. Before the corona crisis, we had at $22 trillion economy. And so you could see it's about 2/3 of our economy, the underlying consumer household debt. The corporate sector-- very important as well. But it's the household sector dominated in the US by mortgages-- 2/3 of that 2/3 or about $10 trillion, $11 trillion of mortgage market.

But each of these markets are really significant. Even the auto lending market-- it might look small at these numbers here, but they're not. That's a big number when you come at it and if you wanted to pursue that business. And a little bit on the non-financial corporate debt market-- we'll see this shake out. Post the corona crisis, a lot of these numbers will go up significantly.

And I would say one thing just off the topic of fintech. I think that though we didn't enter this crisis with a household debt problem in most countries, we had a real household debt problem going into 2008 crisis. While we didn't enter this with a household debt crisis, within three to six months in most countries, we will have a household debt crisis, I fear. Because the consumer sector can't be supporting their auto loans and credit card loans.

And one of the reasons I think this is unlikely to be of the recession, but it's going to be a long U recession, almost like it's a bathtub trying to get out the slippery slopes of this recession, is around the globe, households are going to have to repair their balance sheets. You're going to have to slowly repair balance sheets. And it's not going to be easy, so true also in the corporate sector, most likely.

But the market design matters-- if you are creating a fintech company, you would think about the market design. And I'm not going to dive into this. But each one of these pieces gives an opportunity to break into the credit markets. It might be around data.

You might have a particular area that you could do better data or like Credit Karma. Credit Karma was really about providing free credit scoring. Think about this-- just free credit scores. And Credit Karma then could cross sell and market your products Credit Karma company was formed less than 10 years ago, sold earlier in 2020 for $5 billion to Intuit, Intuit that has the TurboTax, and this accounting software, and the like.

But Credit Karma had 106 million individual files on various folks, not all of whom are their customers. But they cross sell. They had nearly a billion dollars in revenue in 2019. It might be on the funding side. You might have a new way to do securitization or your issuer bank partnership.

And we talked about. LendingClub had an issuer bank partner. Now, they're trying to buy a bank. It might be on the funding side. And that's what peer-to-peer lending tried to do. And they haven't been as broadly successful. Most importantly, I would say that it's usually been on user experience and user interface.

And sometimes it's that you got in through the payment channels, like Toast getting into the restaurant sector through the payment. Toast was a company out of Boston. It was really about software. It was about tablets and hardware as well, that the restaurant server had a better user experience. And the restaurant had a better experience in the tablet and payment side. And then they started to build Toast credit to provide those restaurants credit.

Now, there's going to be a shakeout there, no doubt, in terms of this crisis, the corona crisis. It might be that you're breaking into some slice of risk. And this has been a case for a lot of companies that have broken into manage one risk or another better.

And then lastly, what role are you in? In the mortgage markets here in the US-- and we found that origination has really changed. And we'll look at the competitive landscape. But companies like Quicken Loan, and PennyMac, and others have broken in. And they've broken in on the origination side. And that's partly because the uniqueness in the US mortgage market-- that our government-sponsored enterprises guarantee the bulk of the market.

So the balance sheet credit risk is diminished. And Quicken Loan, and PennyMac,

and others can come in. And probably over half the market is originated by companies that are broadly speaking disruptors. So again, it could be data. It could be funding. It could be the user experience, which is really a critical one, maybe the risks, the roles. Any piece of these might give an opportunity to break into a market or to do something different than the financial incumbents.

So the earlier fintech, way back-- I'm going to take you to a story about an earlier fintech that I like. It's just credit cards. The first use of the term credit card was in the 1880s in a dystopian-- I would call it, but utopian book that was written by Edward Bellamy.

It was a *New York Times* bestseller. It was a bestseller in multiple languages around the globe, talking about the year 2000. Well, Bellamy-- you could go back and look at the book. It's really science fiction. But use the term credit card. It's the first known use of the concept that you would have a card for payments.

Well, shortly thereafter, not really because of Bellamy, you saw a bunch of companies starting to use charge coins and charge cards. And by the 1920s, these merchant cards-- you had an individual merchant providing credit and saying you can buy something on credit. You could call that a point-of-sale credit. Earlier fintech-- about a hundred years ago.

But in the 1940s, one banker in Brooklyn never made a lot of money for themselves. One banker came up with the concept of a credit system where it was multiple merchants. Not one merchant, but multiple merchants. And that charge card-- 75 years ago, so a long time ago, but still somewhat recent.

And that led to the 1940s and '50s, all these innovations-- the first plastic card. BankAmericard was from a California bank. And that's where Visa started. So all of that was fintech of the time. And the only reason I mention it is if you think about what disruptions have come before that now we take for granted, sometimes that's evidence in what you might do now.

BankAmericard was a California bank that was trying to partner with other banks around the country and partnered with other countries to do something that was more universal for the country. The Diners Club was literally about this restaurant concept.

You would consider it almost like a general merchant card, an early Toast. The Diners Club did what maybe Toast is trying to do now, inside the restaurants, providing more use of those initially high-end restaurants on the East Coast. So what disruptions are in the value chain now?

And particularly, this little chart-- I borrow from an interesting long paper on it, is think about the different parts of the value chain. Whether you're sourcing capital, you're actually assessing credit. That's the underwriting of the credit or actually just servicing the credit like you're servicing a student loan.

It can be any part of the value chain. And you could go in and disrupt. And we're not going to dive into this chart. But I'll just take disbursements for a minute. If you look at that vertical, it could be digital wallets, or virtual currency, or the machine learning. If it's in credit assessment, it could be the alternative data. So each of these provides a little opportunity to disrupt the current business model.

And so we talked about payments last class, credit. You really have to get, in a sense, granular into which part of the value chain. And then, how do I bring a technology to it that maybe the big incumbents aren't yet doing in a sufficiently sophisticated way? Or you might just bring it to one sector like Toast did to the restaurant sector. It might be sector specific. So where do we go?

Well, we've already seen big techs there, the payment unicorns. There's hundreds of other payment companies that are building credit on top of payment. And sometimes a payment company is really also a credit company, like Brex is both payment and credit. AvidXchange is mostly payment, but is moving into credit and then some that are built just on credit.

And so I thought I would start with the business side-- small, medium-sized enterprise lending. Again, there's no really good definition of SME. But the definition that these companies would take at it-- they would say these are companies that are having difficulty borrowing from the big banks. It's either assessing credit or providing that credit in a timely and a cost-effective way.

Brex is an interesting company that started around the concept that, I can't get money as a startup. How can I even get a credit card if I had a-- it's a mixture of

seed investing and credit card provisions. Some of these companies I put on here like Amazon, Alipay are big tech. I don't think you can leave them out. Some started in the payment side like Square and Stripe and Toast-- which I mentioned earlier-- PayPal. All provide small and medium-sized enterprise lending.

Some are really just like Kabbage and Lendio, provide comparison, that you can go on the Lendio prop platform, and you can compare and contrast. They're more like a broker or an agent than actually making the lending. And Funding Circle is one of the only ones that is a little bit in the marketplace lending. Do I see some questions, Romain? I'm doing a thumbnail taste test here.

**TA:** So in the chat, there's quite some activity about LendingClub. Perhaps you can provide the class with an overview of their business model. And what are the challenges they've been facing?

**GARY GENSLER:** All right. I'm going to do that in about 10 minutes. So I'll hold that if I can. LendingClub has been more about the household sector than the small and medium size. I'll ask this. Has anybody in the class actually worked at a startup, worked at any corporation that's barred from one of these companies?

**TA:** Alida, you've unmuted yourself. Yeah?

**AUDIENCE:** Yeah, I was at Citibank at the time, that Citibank partners with C2FO as a partnered [INAUDIBLE] program. We financed some of the smaller suppliers in those programs by large [INAUDIBLE].

**GARY GENSLER:** So it's interesting. Could you share? Why did Citibank partner with C2FO, rather than make those loans themselves? And this is an important-- the relationship with the incumbents between the disruptors. Why in that one circumstance do you think Citi chose to partner, rather than do it on their own?

**AUDIENCE:** [INAUDIBLE] an interesting model that actually allows the corporate to lend to its suppliers is the easiest way to say it would have been short-term firm. But if you look at a company and supplier base, you'll see that 80/20 rule applies fairly well. So the top 20 suppliers are generally supplying appropriate with the majority of their inventory. [INAUDIBLE] Purchasing on that bottom tail of the suppliers is-- they're all very small businesses.

They're hard to lend to. It's very hard to do all the KYC requirements, which is really what Citibank does not like doing [INAUDIBLE]. And so a company like C2FO could come in there, partner with a corporate [INAUDIBLE], and lend to or extend credit to a supplier [INAUDIBLE].

**GARY GENSLER:** So this is an important aspect that Alida just raised. Large incumbents sometimes don't feel that they can, in a cost-effective way, assess the credit and reach the distribution to small businesses. And then the disruptive companies say, well, wait, we could provide.

That's a little crack in the system. That's something we can have more financial inclusion, whether it's Brex for the startups, C2FO for a lot of the small businesses, and the like. And the incumbents say all right, we can't. But we can, through C2FO and others, reach them. And then it helps down the supply chain. I think Ivy's hand was up, maybe?

**TA:** Yes, correct. Ivy, go ahead.

**AUDIENCE:** Yeah. So I use to work in securitization. And Brex is one of my clients and then also worked at a startup that uses Brex, too. And so I think, though, to your point of-- their user interface is pretty amazing. And they've also just have really identified this white space of startups.

But I think where we got comfortable in terms of the diligence is the fact that they're pretty much-- it's a very elegant way of just having these startups making sure that they have literally enough cash in the account. So they're monitoring that. Basically, if you have access to these startups, bank account, day to day. And they started with startups.

And they've been very, I think, thoughtful about which sectors they're going to, like life sciences, and e-commerce, and now having cash management, which also makes a lot of sense in terms of just having yield, so just wanted to offer a little bit more color there.

**GARY GENSLER:** And Brex started with this concept of, how does entrepreneurs get money when you don't have any track record? Right? Literally, you don't have any track record. They had to also rely on something we've talked about already-- OpenAPI. They had to

get data.

And they had to do it, as you said, in an efficient, elegant way to get that data and get access. Do you have cash in your account, so to speak? And now, they've grown up a certain expertise in that startup world. And it's not equity that they're funding. It's loans, basically, against the cash flow.

What you'll see also on here is, as I said, some of the big tech companies like Amazon and Tencent and Alipay. You see some of the really, now incumbent fintechs, as some folks would call them, like Stripe and Square and PayPal and Intuit that have built up a long history now, either in the payment space or in the tax prep and accounting space, as some have come from accounting.

Some have come from the payment side where they're getting data and corporate business relationships. What you don't see is a lot of the challenger banks that we're going to talk about in our next class. Now, Prosper is here. They've started to offer some lending side to the corporate side. Most of the challenger banks and nearly all of the marketplace lenders that are of size are in the household sector, rather than the corporate sector, which I find of interest. I don't if there's a question.

**TA:** We have two hands raised-- Camillo and then Carlos.

**GARY GENSLER:** All right. And then we're going to go to the household sector.

**AUDIENCE:** OK, this is about the household. I'm sure you know about this Brazilian unicorn called Nubank.

**GARY GENSLER:** Oh, absolutely. Yeah. And we're going to be talking about Nubank a fair amount next Monday as well.

**AUDIENCE:** OK. I just want to know-- well, maybe next class. Do you think that their business model about giving online credit cards to-- I don't know. I think it's 8.5 million people already, who have a Nubank credit card, is sustainable. Because I don't know what's their specific innovation, apart from accepting applications on line of credit cards. Just I'm wondering if that's going to be-- are they are going to have some [INAUDIBLE] problem?

**GARY GENSLER:** We'll dive more into Nubank in the next class. But let me just generically say, I think that it's the reality of startups that more will fail than succeed. Now, as it specifically relates to credit cards, in the credit card space, the big incumbents aren't going to keep the whole market.

And maybe that leads me for a minute. I'm going to come back to mortgages in a second. This is the US credit card system. It's not Brazil. But the big seven, what I call, or the big eight being the big four or five banks-- American Express, Discover, and Cap One-- control 80%, 78% as of last year-- credit card business.

There are a lot of economies of scale. There's a lot of economies of scale back to managing risk and balance sheet. Credit cards as opposed to mortgages are not guaranteed in any way by the US government. It has a very different risk profile. This is about a little over $1 trillion asset class market in the US. But 22% are smaller providers.

And so Amazon, for instance, partners with Synchrony Bank. And Amazon has the Synchrony card. Amazon also, I think, has something with JP Morgan as well. You'd probably say Amazon will be sustainable. Amazon is such a phenomenal profit generator, particularly with the crisis now.

I can't speak to any one startup. Can they chip away at this 22%? Yes, they can by using alternative data. But the big seven or eight are not asleep. They're not ignoring alternative data. But a new startup can say, maybe we can approach this in a different way and particularly provide a better user interface.

Here in the US, what's happening is rather than credit card products, they're providing personal loans. But let me hold on that for a second, because I want to go back to the mortgage market. I mentioned this in the mortgage market. These are figures from 2018. These are the largest mortgage originators in the US. It doesn't mean that they bought these loans and held them on their balance sheet.

The yellow are the non-banks. And PennyMac, for some reason, is not on here. They should be. But of the top 10, 5, the yellow are non-banks. Now, do we call them fintechs? Absolutely. They are giving a different user interface with the public, and they've just taken off.

Part of it is regulatory. Part of it is since the 2008 crisis. Holding loans on the balance sheets become less attractive to the big banks. In terms of their capital charges and the like, part of it is also because in the US, this is highly tied to the government-sponsored enterprises.

But big disruption in the last 12 years, that about half of the loans are originated by, broadly speaking, yeah, the non-banks sector who are largely then laying it off to the asset securitization marketplace. Disruption of the past-- I believe there'll still be disruption in the future in this space.

Back to the credit card side, what we were talking about there with Camillo-- and I'll pause if there's other questions. I just want to take a look also at China. China's biggest credit card issuers-- all that are building upon that UnionPay platform we talked about. UnionPay was started by, I think, 84 banks in China, really with the People's Bank of China bringing that together. UnionPay is that one backbone of their whole credit card payment system.

Interestingly, as dominant and as strong as Alipay and WeChat Pay are-- and in a sense, WeChat Pay and Alipay leapfrogged the banking system. There's real growth going on in the credit card business, but not from disruptors and startups. It's like the commercial banks getting back into it. Romain where there some questions?

**TA:** Yes, Alessandro?

**GARY GENSLER:** Please.

**AUDIENCE:** Yes, Gary. I'd like to get your point of view on the following topic. So I was thinking about how these new credit card-- think that companies work. And most of them, not all of them-- they got to partner up with the bank, right? Unless they have huge amount of cash anticipated, they got to partner up with a bank that gives actual credit.

**GARY GENSLER:** Let me just pause. They either have to partner with a bank, which is the issuer bank partner model. And we're going to get to LendingClub, I promise, that has that issuer partner, that bank that's a partner. Or they tap into the securitization markets. And so for those who are not familiar, asset securitization is the concept that the

securities markets are the investors in the loans, rather than holding it on a bank's balance sheet or a finance company's balance sheet.

And that innovation, asset securitization starting in the mortgage markets 40-plus years ago moved to the credit card markets in a robust way by the 1990s, is a very real way to lay off that side, meaning find somebody else to be the investors, rather than have a balance sheet. So back to you, Alexandro. It's either a partner bank or asset securitization.

**AUDIENCE:** So in the end, these guys, these fintech companies are second intermediary, right? So how much money do they actually make? Because I'm thinking the more and more companies we can see, the fees are going to go down. So competition will drive their fees down. They also have to pay a fee to-- you'd see they're a balance sheet bank or in the case of securitization, too.

**GARY GENSLER:** So you're absolutely right. But financial intermediation has multiple layers. And the more advanced an economy is, usually the more the layers. And the more competition in the market, more the layers. And you might think of layers as inefficiency. It might be.

But often, layers would bring efficiency and competition. So some financial firm is doing the origination. This is brokering and selling and providing a user interface. And they might not want to be the balance sheet lender. They might say, I'm going to partner with the bank to be the balance sheet lender. What we're going to do is we're going to compete and give the most remarkable, robust user interface and brokerage.

In the mortgage market, back to that, the Quickens, and United Wholesale Mortgage, and PennyMac that aren't on here, by and large, only hold the mortgage for a few weeks, a few days, maybe a couple months. They have a warehouse line of credit to do that. And then they securitize the rest.

But the mortgage market in the US has a very robust securitization market. You asked about credit cards. Credit cards-- this 22% that's competing with the rest does not have as big a robust securitization market. Of the trillion in the US, I think the credit card securitization market is about $150 to $200 billion if I recall. So it's harder.

But it might be that company, the Nubank, as Camillo asked, that has a better use of underwriting, and data, and so forth. What somebody wouldn't give for Credit Karma's data with 106 million files? That's a robust data set. Now, Intuit, we know, paid $5 billion. So maybe we do know what somebody would pay for it

I wouldn't diminish being at one particular slice. If you can find the slice in the value chain and compete away some of the incumbent's margin, credit cards are very big business-- trillion dollars in the US, very big in Europe and Asia as well, growing in China rapidly. And there's a lot of margin.

I would say the thing that's competing the most-- and I'm going to jump ahead. But, Alexandro, stay with us for a minute-- is the personal loan business. Personal loans differ from credit cards in an important way, is that credit cards are what's known as a revolving line of credit. Each purchase adds to your credit balance. You have a limit. If you're high, if you're super prime or a prime borrower, your limit is higher. If you're sub-prime, your limit is lower.

That business of revolving credit-- about a trillion dollars in the US. We now have this personal loan business. It's only about one sixth the size, about $160 billion in the US. That personal loan business is generally term financing, a specific term that you have to have an installment loan and pay once every month for 36 months or for 48 or 60 months.

The underwriting risk of a term loan is lower than the underwriting risk of credit card business or revolving credit. The personal loan business is where most of the disruptors are. The SoFis, and the Prospers, and the Nubanks, and so forth-- they're trying to break in the personal loan side as much or even more than the credit card side. But I don't know if-- Alexandro, did you want to follow up on anything?

**AUDIENCE:** No, no, no. My point was just-- I don't know if you agree on the fact that we would see a massive wave of mergers between these companies. I mean, in my mind, there's not much room for all of these hundreds of companies that are just popping up like mushrooms here.

**GARY GENSLER:** I think we'll see mergers. And I think we'll see failures. But the question is, is there an opportunity in the midst of all of that? Is there an opportunity along the way?

We've seen in the payment space a lot of consolidation and the payment system providers, the PSPs.

But there's still a lot of opportunity for sector-specific payment companies. And we've even seen that the data aggregators in the payment space have started to combine and be bought where that phase of things. I think in the household credit space, we're going to see still a lot of competition-- personal loan.

And I think in the personal loan side, they will be chipping away at some of the profit margin, so will be trying to, at least, of the incumbents in the credit card space. And interestingly in China, the credit card space is trying to chip away at what Alipay and WeChat Pay built up. Because there was a reverse over there that's happened. Whether they'll be completely successful-- another story.

**AUDIENCE:** Thank you.

**GARY GENSLER:** [INAUDIBLE]

**TA:** [INAUDIBLE]

**AUDIENCE:** Yeah, sorry. So I have a question on that point that you brought up on UnionPay being an attractive alternative to Alipay and WeChat Pay.

**GARY GENSLER:** [INAUDIBLE] I'm just going to say it's been growing more quickly than I might have thought, that I wouldn't count out credit cards in China. They've been growing.

**AUDIENCE:** Would you know what were the value propositions of UnionPay that liked their consumers to opt to its UnionPay? Yeah.

**GARY GENSLER:** Well, I'm not-- I mean, maybe some of our fellow students know better than I. But I think, listen, you can't count out that there's a distribution channel when you have 84 banks and particularly the six or eight big banks in China that own a piece [INAUDIBLE] and all the hundreds of millions of people there. They're not asleep.

As big tech comes in, the incumbents don't rest. It's competition. But they do have the advantages of incredible distribution channel, meaning the depositors and clients of those banks. The product itself, the revolving credit product, the classic

credit card product has a little bit more flexibility than something just on an e-money wallet. And it doesn't mean Alipay and WeChat Pay can't offer something that is pretty much identical to a credit card [INAUDIBLE].

**AUDIENCE:** That's right.

**GARY GENSLER:** But their balances and the like might be different as well, but I'm not sufficiently close to it.

**AUDIENCE:** OK, cool. Thank you.

**GARY GENSLER:** And I might pull some data for next class. I'll show you what I'm talking about there. Personal loan business-- just to give you a percentage of unsecured personal loans, who is making unsecured personal loan? And again, a personal loan is not tied to a credit card. It's usually an installment or term loan. But you can see the shift just in these five years, that the disruptors are eating into the market share in this space.

Here are some of the personal loan companies. Not a lot of overlap. Prosper is on both lists. But not a lot of overlap with the list to the small and medium size. And Camillo, I'm glad I have NuBank on here. But we'll come back to a few of these when we talk about challenger banks-- Revolut, Nubank. A number of these are really what we also call as challenger banks.

Student loans-- I could probably ask for a show of hands. How many of you have a student loan by one of these? And in the US, the private student loan market is only a small share. Student loans in the US are dominated by our Department of Education.

Over 92% of student loans in America are either guaranteed or direct loans from the Department of Education. But of course, the private loan market where graduate students and particularly those who are not US citizens are more likely in the private student loan market. These are probably familiar names to many of you, whether you used MPower, or Prodigy, or others, basically to shop for a student loan or a traditional bank like SunTrust and Wells Fargo.

And that 8% of that market is still about $100-plus billion. Because the overall student loan market is $1.6 trillion, so not small numbers. So marketplace lending-- I did say we would get to this. It's an online platform connecting borrowers and

investors. So it's a platform in the middle, started with this concept of being peer to peer.

And so this is a look at LendingClub from their own documents from last summer. LendingClub-- 3 million-plus borrowers on one side of the platform economics, 200,000-plus investors on the other side. Now, don't think of it as 3 million and 200,000, because it gets more concentrated than that.

But LendingClub sits in the middle, between borrowers and investors, or you might call lenders, but investors. But they partner with issuing bank. They don't want to take a lot of this on their balance sheet. They take some of it onto their balance sheet.

But they want to basically have issuing bank partners plural, because they keep some banks in competition. And so what LendingClub is providing is the platform and some of those issuing banks. They're not the Bank of Americas, but they're much smaller banks. Say, all right, we don't have that front end. We don't have that platform, that user experience. LendingClub provides that.

And the investors on the other side of a LendingClub are often hedge funds. And asset managers are saying we can invest. LendingClub is providing us a portfolio of loans. And you can see the numbers here-- 16-month average duration, 1 and 1.6 to 7 and 1/2% range of returns.

That's a pretty wide range of returns. And who are they? Managed accounts means it could be an account at BlackRock or Fidelity that says, we're going to put a little bit of money into this credit market and the like. Now, Luke was right. LendingClub and many of the other marketplace lenders were quite a dream. LendingClub happened to go public.

And then their market value came down quite a bit as they had to prove out whether they can make money. Where have they been in these last 10 years, just to give you a sense? In 2010, only it was $100 million of originations. But it was all retail originations, by and large.

By 2018, the retail, which is a very small part of it-- they're originating very-- quite a different bit of loans, how they're originating these things. And China-- I just want to

mention China went through a remarkable wave of peer-to-peer lending.

And then the People's Bank of China felt, no, we've got to get control of this. I mean, literally there was 2,700 peer-to-peer lending platforms in China just 4 years ago and most recent statistics down to about 300-plus. And in November of 2019, the official sector in China still said this isn't right.

The peer-to-peer lenders need more regulation. In essence, they need bank-like regulation. And what's interesting is back to LendingClub, LendingClub has actually announced the purchase of a bank. Romain, I think I saw a hand go up.

**TA:** I don't see any, Gary.

**GARY GENSLER:** Oh, OK. But there were questions earlier about LendingClub.

**TA:** Yeah. So now, we have two hands raised. Let's go first with Jose.

**AUDIENCE:** Yeah, so I'm not super familiar with LendingClub, but I'm familiar with another one in Europe. I think the way it works is a bit different. I would like to hear your opinion on that model.

**GARY GENSLER:** [INAUDIBLE]

**AUDIENCE:** Sorry?

**GARY GENSLER:** I'm listening. Yes.

**AUDIENCE:** So it's called Mintos. I think it's the biggest one in Europe. And basically, what they do is there's a group of loan originators that are independent companies that create these loans and give out these loans. And then these [AUDIO OUT] [INAUDIBLE] loans to independent investors. But they guarantee the payment of the loan.

So if the person that asked for the loan doesn't pay, the loan originator pays for that payment to the investor. So basically, the risk for the investor is that the loan originators go bankrupt. I learned there's something similar in the US to that.

**GARY GENSLER:** Well, so what you're saying is how they are managing the risks. The investors are taking a credit risk on the platform, the originator, rather than taking a credit risk on the portfolio of loans themselves.

[INTERPOSING VOICES]

**AUDIENCE:** --one more layer in between. So there's the loan originators. And there's hundreds of companies, then the platform that connects the loan originators with investors. And basically, the investors invest in specific loans, but they are guaranteed by the loan originators.

**GARY GENSLER:** Why don't we do this? Why don't you shoot me an email? And I'll try to take this up in our next class. And I'll look at the company more specifically. But to the point, there's no reason you can't find a new model as to who takes the credit risk.

Credit risk is inherent in lending. Somebody is going to repay on time. And others are going to fall into delinquency or even default. And so then the structure of a market, whether it's mortgages, credit cards, personal loans, small businesses-- the structure of a market might evolve as to how to slice up who bears that credit risk.

And there's not just credit risk. There's prepayment risk. There's interest rate risk. There's numerous financial risks. And so what's just being highlighted by Jose-- and I apologize. I just don't know that model, is that the investors, rather than bearing the direct credit risk of the borrowers are having some of that held by others. And they're bearing the risk of the intermediary in between the platform.

And in essence, that's true in the US mortgage market, a very different part, what you asked about. But the US mortgage market conforming loans are guaranteed by the government or by the government-sponsored enterprises so that your risks then are a little bit different. It's not the credit risk. In the US mortgage market, you have prepayment risk. Will somebody pay the mortgage early as interest rates might go down and so forth?

And then in parts of the US mortgage market that are not the conforming mortgage market, you did have credit risk. Because the government wasn't guaranteeing. And a lot of the sub-prime mortgage mess that we got into in 2008 was around that.

But rather than taking time now, why don't you shoot me an email? I'll look at this specific company and come back. Romain, were there other hands up?

**TA:** Yes, let's go with Akshay.

**AUDIENCE:** Hello, professor. So I had no question with the business model of LendingClub. So what is the role of issuing banks in this case?

**GARY GENSLER:** So issuing banks basically are lending their balance sheet. So let's say an issuing bank has its own availability of depositors and has not built the front end to the borrowers. So the issuing bank is standing in to do that.

In addition, they're actually papering and documenting the loans. So as you see on this chart here, the issuing bank is sending the loans out and taking it in. So there's a regulatory reason that the issuing bank is there. So the issuing bank might issue the loans and hold them. Or the issuing bank might issue the loans and then, literally, as this chart shows, resell them to LendingClub. And LendingClub sells them to investors.

So there's a bit of-- it's similar to what's called a warehouse line. The issuing bank is standing there ready to take loans, but then resell them. Because their capability is only a certain size. LendingClub says they did $10 billion of loans in 2018, if I recall the number.

The issuing bank doesn't want to put $10 billion on. But they're providing the liquidity for the first few days or weeks until LendingClub then provides the investor to buy the loan. So it's similar to a warehouse line, but it's actually a purchase and sale. They purchase the loan or issue the loan and sell.

There's also a bit of regulation that you actually have a bank involved. And part of what was going on, both in the UK and the US, is this marketplace. Peer-to-peer lending started, is the platforms didn't want to, frankly, register and be regulated like banks. They needed somebody else to make the loan to have that interface. I oversimplified. And probably a lawyer would tell me I've gotten it a little bit wrong.

**TA:** And then we have Adam who would like to provide some insight on UnionPay.

**GARY** Please. Please. And then [INAUDIBLE] closed on alternative data.

**GENSLER:**

**AUDIENCE:** Yeah. In response to [INAUDIBLE]'s earlier question about UnionPay, so UnionPay is a state-owned credit and debit card network, all right? So the one thing that separates them from the [INAUDIBLE] duopoly between Alipay and WeChat Pay, which dominates 90% of the market, is that it can be, well, among other things.

They can be used for all mobile devices and computer browsers. So technology wise, they do have an advantage. Because for WeChat Pay, it's quite restrictive in terms of technology, because they're used mostly on mobile. And unlike Alipay and WeChat Pay, UnionPay actually supports almost all currencies and operates in many countries besides China, also a feature that both Alipay and WeChat Pay are struggling with, due to the peculiarities of the Chinese legislation.

And the one thing is that what UnionPay focuses on is the fact that they focus on the efforts of those Chinese account holders. Because most people-- in fact, the majority of the people who owns a credit card will be UnionPay holders. They are focusing on people who travel abroad, predominantly to the US, in fact.

So you see a lot of shops that are targeting for Chinese customers and travelers. You would see that UnionPay. They could actually pay by UnionPay. So these are the edge that they have over Alipay and WeChat Pay. And that's just in response to the earlier question [INAUDIBLE].

**GARY GENSLER:** Yeah. What I'm going to do is-- because we only have two minutes, is I'm going to hold off and talk about alternative data when we start up our next session on challenger banks and the like and just close out with a little comment, if I might, on just to-- what I've already said in our first class on professionalism. Hope this slide is there.

But again, is that I just want to lend to you again from my years of experience. We're in a very unusual time now with the corona crisis. And we're even at MIT. It's these Zoom classes and pass emergency, no credit emergency, and the like.

But I would just share with you my own observation, that for those of you trying to get the most out of this MIT experience, it's not easy. And in some ways, it's just frustrating as heck, I'm sure. But again, to the extent that you can, to the extent you

can come prepared, and be curious, and reach out to faculty members like myself, and leverage off of our experience, take office hours, I would do it.

I know this is a lousy time. A lousy time. I'm just reminding us all of that and saying take whatever you can out of this MIT experience, even if it's diminished in some way. I want to make myself available again. If you find the readings of interest, do them.

If you can't get through them because you're distracted and you're looking for a job, I get that. I get that. I'm just saying the more you engage, the more you will invest in yourselves and get out of it. And on plagiarism-- and I say this just to remind people again.

There's probably-- it's going to be hard for any of you-- get no credit emergency. But somebody might get no credit emergency if you submit a 1,000-word paper and 600 or 800 words are plagiarized. That's your pathway right into that no credit emergency. It's easy to avoid, because you know if you're taking a lot from something else.

And I just say this, because I have had those experiences. I just mention it again, just because I want to do you the favor of helping you make sure that even in these unusual times, that you protect yourself if you want to get these 9 credits on your transcript. But mostly, I put this up again at this part of the semester, just to say, we want to make this MIT experience as good, given all the challenges as we can. And we know it's a heck of a crazy time.

But to the extent you want me off hours or another time or you've got questions that I'll further research, just let me know. Or if you have a fintech startup, let me know. And I'll be all there. And I'll read that, too. I had one student recently send me a whole paper on a fintech startup, just outside of this. It's not an assignment. But they're engaged in a startup. And I'm going to review it and give some feedback.