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Host
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Speakers
Andy Morton, Citi Global Head of Markets

PRESENTATION

BETSY GRASECK: Research disclosure. For important disclosures, please see Morgan Stanley research disclosure website at morganstanley.com/researchdisclosures. If you have any questions, please reach out to your Morgan Stanley sales representative. Okay. With that, today, I am so thrilled to have Andy Morton, Citigroup's Global Head of Markets. Thanks for joining us this morning.

ANDREW MORTON: Betsy, thanks for inviting me.

BETSY GRASECK: Okay. So, I'm not sure if everybody in the room knows you and your background and the full set of responsibilities that you have at Citigroup. So maybe you could help us understand and tell us a little bit about yourself.

ANDREW MORTON: I'll do it in reverse chronological order maybe. So, I'm the Head of Markets—Global Head of Markets for Citi. I've been co-head with my partner, Carey Lathrop, for the past three years. Carey left Citi about three months ago. So, at that point, I became sole Head of Markets. And Markets is a business within the ICG construct that's run by Paco that is essentially responsible for all the kind of institutional business that we do.

I've been with Citi about 13 years, the first 10 of which I basically ran the rates business and maybe a couple of ancillary businesses that are attached to rates like the repo business. So almost same—similar job for a decade. And then as mentioned, when reporting to Paco, when Jamie Forese left, Paco became Head of ICG. Carey and I became co-Head of Markets. So, three years running Markets with Carey, now by myself and then 10 years before that, running rates.

And then I had a similar tenure at Lehman for about 13 years, where I mostly did fixed income and rates. And then really getting way back into the long, long, long distant past, I was a finance academic. So, I was a math finance person, and that was kind of the entree for me into this business. And my first job was as a quant, as we call it. And I still retain a little bit of that, but that was a long time ago, and they don't let me touch any of the codes anymore.

BETSY GRASECK: You're not in the modeling anymore.

ANDREW MORTON: I'd love to be, but they say, “Hands off, old man. We got it.”

BETSY GRASECK: Okay. Very good. So right person, right time. We've got a lot going on in rates, which I know we'll talk about a little bit into the conversation here. But maybe you could just start off by helping us understand how you feel that Citi's markets offering is differentiated from your major competitors.

ANDREW MORTON: I think, obviously, we're—as many of us broadly in this business of markets, and each bank has its own way of approaching it, and each bank has its own strengths and weaknesses and coverage and so on, I think that there's two or three fundamental things for Citi that are really different. And some of them are—as we'll discuss probably—some of them are becoming material right now.

And the number one thing I would say is that we—in the mix of our client share, we have a far higher portion of our client business that comes from corporates as opposed to investors or institutions. And for Citi, that number is on the order of 30%. So close to 1/3 of our client business originates from corporates.

And for pretty much every other bank that I'm aware of that number is more like 10%, 12%, 13%. So, we have 2x to 3x typically, the share of our business that comes from corporates.

And that, in turn, leads to why we're good at certain things. So, we're particularly big in foreign exchange, and that's because, obviously, corporates are active in foreign exchange. So that—I guess that would be the number one thing.

Number two, and this one is probably more obvious to anybody knows Citi. We're a very broad institution, and we're very broad in markets. So, we try to be a full-service provider, both in terms of products. We don't have any real, major product gaps and also regionally we're pretty significant. And we will talk again about that a little bit more, but we're pretty significant in all the major regions. So, we're quite broad.

And those two things, I think, those two things tend to make Citi's offering, therefore, a little bit less volatile, because corporate activity is steadier. Foreign exchange activity is very, very steady. Investor activity is sometimes tough to manage. You're dealing with some of the smartest hedge funds in the world. Corporate activity is somewhat easier to manage, and maybe those things give us a little bit less revenue volatility than others.

And then just a couple of other things about us that's a little different. And this one, again, is very well-known. Our relative strength and our relative revenue share between fixed income and equities is very tilted towards fixed income. So, we're particularly strong in fixed income, typically, #2.

And equities has just been an area that's been tougher for us over the years, and we've just historically been smaller. And some of the footprint and some of the ways that Citi itself is set up, this leads us to be a little bit smaller in equity. So, our—if you looked at our ratio of fixed income revenues to equity revenues, for example, that would be higher than almost anybody else.

And I guess one other thing, again, most people have this business, but I think we have an outstanding financing and securitization business that we run quite well, we think, with our banking partners, and that distinguishes us a little bit as well. So—but I'd say that it's the corporate and it's the fixed income-equities mix that really makes us a little bit different from almost everybody else.

BETSY GRASECK: And give us a sense of what your approach is to managing the business.

ANDREW MORTON: I think you have to start with what we said is the characteristics of Citi and use that to drive what our strategy is. And I think everybody would say they have a franchise model, and that would be my first answer. That we're trying to make our money from the franchise. But I truly believe we actually live and breathe that more than others.

It's a gift to be at Citi and to be the recipient of some of the flows that we have and some of the large, both episodic and small trades from around the world. And we try to run the business to just maximize that franchise.

So, traders at Citi are highly skilled. They're on top of their game. They've got a very difficult job, but they're not investors. And we're constantly telling our trading teams that your job is to deal with the flows, manage the flows, trade on up, whether it's a 12-hour horizon, a 72-hour horizon. But your job is not to invest for the next two or three months or two or three years. And so, we're really trying to make the most out of the franchise.

So, for example, we have our sales teams within all our products and markets are totally embedded within each product. An alternate model that some have is where you have sales completely separate from trading, and you have a trading org. and you have a sales org that go sometimes right to the very top of markets or even higher.

Our view is the exact opposite. So, we have sales and trading together in each business line. Because we believe that way you just get—that business is pursuing the opportunity—the client opportunity in each case. So that franchise approach is important.

There's another thing that—and both at my previous employer, and at Citi, and probably everybody has this, you have this ying and yang of product versus region. What is the product responsible for, so the rates product, the credit product, the equity product. What's the region responsible for? And who has the upper hand, and who's assigned what responsibilities? We generally, I think, do that quite well. And most of our risk taking, most of our risk limits, most of our activity, our hiring and so on, has driven along global product line. So, our product lines are quite strong, and they're the ones that are responsible generally for delivering the outcome in each product.

And that leads to—that helps when you have—and again, we'll probably discuss it later. When you have global flows, if you were set up on a regional model, sometimes I've seen you have the tendency for the regional teams to try to hog those flows and keep them without sharing them with the global. And so, our global model works well with this product approach.

And I guess, I don't know if it's related to my own background, probably is a little bit. I think we have a very strong quant and tech field to Markets. We have a very strong quant group that's very centralized and very powerful. And our technology team, which isn't technically in Markets, works very closely with us. So, we have quite a push and quite an emphasis on both quant modeling and tech delivery.

BETSY GRASECK: Okay. And you're delivering that to the clients via your platform. What's that called again?

ANDREW MORTON: Velocity.

BETSY GRASECK: Velocity, right. Okay. I remember.

ANDREW MORTON: But with a 'y,' Velocity.

BETSY GRASECK: Got it. Now I remember back at Investor Day a few years ago, that was being profiled as one of the tech areas for us to explore, which was pretty impressive.

ANDREW MORTON: Yes. It's a good example of something where, frankly, Citi came a little bit later to that development than others did. Back in the day, there was other banks that had—that were flow monsters and so on and had—tried to have all-purpose client portals. But in part, because we developed ours a little bit later, we developed it with more modern technology. And so therefore, our platform is a little bit easier to use, a little bit faster and a little bit, frankly, better, in my opinion, than some of the others and even though we were sort of somewhat later to build our platform.

BETSY GRASECK: Got it. All right. So that's a good background on just understanding your go-to-market strategy and the products and services that you're responsible for managing. With that as background, can you tell us a little bit about how Q2 is shaping up in your business line?

ANDREW MORTON: Sure. If it's okay, I'd like to talk a little bit of how my colleagues in Investment Banking are getting along first. That's another thing we wanted to get out there. So, in banking, our assessment, our belief is that the wallet this quarter is down pretty materially. Obviously, with the geopolitical situation, the macro situation, the issuance is lower, M&A activity is lower.

So, our belief is that the wallet is down 50% to 55% in Investment Banking. And our assessment is that we're going to come in right around at that—those kind of levels. So, for Investment Banking, we expect to be around where the wallet is, which is, as I understand it, around minus 50%, minus 55% from the same period last year.

BETSY GRASECK: Yes. That's a year-on-year.

ANDREW MORTON: Year-on-year, like Q2 last year to 2Q this year. In Markets, it's obviously a pretty different situation. Volatility is basically our friend. And we've not just had volatility in one or two asset classes or one or two things to focus on. We've obviously had the central bank surprises, including what we're going to see from Chair Powell this evening, compared to what was thought of a week or so ago.

You've had commodity volatility. You have the foreign exchange volatility. And some of those things, as mentioned, particularly commodities and foreign exchange, link into our platform, what we believe we're pretty good at. And our activity with corporates is probably up 1/3 over the same period last year.

But revenue-wise, we're currently expecting to come in north of 25% above last year's same quarter results. That's our current estimate. But I have to say, just given the volatility, even in two weeks, when you're having moves like we're having in the last few days or so, that number could obviously fluctuate. But currently, I'd say we're coming in north of 25% quarter-on-quarter versus the same period last year.

BETSY GRASECK: Okay. So up 25% year-on-year.

ANDREW MORTON: Year-on-year for the quarter, yes.

BETSY GRASECK: Yes, for 2Q.

ANDREW MORTON: For 2Q.

BETSY GRASECK: And that's a summation of FICC and equities?

ANDREW MORTON: Yes. As you'd expect, it's particularly strong in FICC because of the rate volatility, the FX moves, the opportunities in FX and commodities as well. But it's been pretty decent in equities as well. So, it's mostly driven by fixed income, but it's been a pretty good quarter for us in equities as well. That mostly from equity derivatives, again, driven by the volatility which tends to be our friend.

BETSY GRASECK: Got it. Okay. Yeah. I mean the dollar strengthening this quarter has been pretty stunning as it—I mean, I feel like it's the most I've ever seen in a quarter.

ANDREW MORTON: Yes, it's a very interesting situation. It's the reverse really of what was going on for a decade, maybe where central banks were arguably competing to lower the value of their currency to raise inflation. Now everybody wants to—is really trying their best to strengthen their currency to prevent inflation. And that is kind of an opposite phenomenon. And obviously, it's not really working out as well for the other central banks.

The U.S., in spite of being a little bit late to the game in getting off the transitory, at least has tightened financial conditions and has done a few hikes and is talking about QT and so on. So, the U.S. central bank, being ahead of the game, has really strengthened the U.S. dollar and made it a little bit more challenging, even more challenging for the likes of the ECB and the NPC and maybe even emerging markets as well. So yes, the dollar move has been unprecedented. But kind of given what central banks are up to and the fact that the Fed is maybe half a step ahead, it's not—it's more or less to be expected, I think.

BETSY GRASECK: Got it. So that's a great update on the quarter. Can we dig in a little bit to your comments on equities? And it is a smaller piece of the pie, but you obviously are investing in it. So, could you give us a sense of what your ambitions are in that business line?

ANDREW MORTON: Sure, sure. And I think it's a really important thing to understand, and we've thought through it a lot, and we've discussed it a tremendous amount internally. Obviously, it's been a long-term journey with Equities at Citi. And I guess the first thing I would say, Betsy, is that we're not trying to get bigger in equities or trying to grow our Equities business just because the number looks low relative to fixed income or just because the share looks low relative to our competitors. It's not just because it's there, we want to get bigger.

Our view and our vision of it is that there's really quite relatively low-hanging fruit in Equities because of how big we are in Markets, how big we are at the rest of the firm. There's advantages that the rest of the firm brings, that I'll talk about in a second. But more and more, particularly in prime, but really across all of Equities, you're finding that the activity is coming from big, global multi-strategy clients who we're really significant within fixed income.

So, there's clients with whom we do a tremendous amount of business in fixed income that we would like to ask them for the equity business. And frankly, they'd like to give us the equity business. They look at what they're giving us in fixed income, which sometimes is quite hard business, bid/offer business and competition. And they would like to give us some business in equities that—I wouldn't say it's easier business, but it's sometimes mandated business, prime balances and the like.

So, the first thing I would say is we're doing it because we believe that there's opportunity with that set of clients. And that also leads into what our strategy is a little bit. So, we're not just randomly trying to hoover up balances. We're trying to get balances, for example, and do business with the clients that are really relevant to us in the rest of Markets.

And we're finding in general, like I said, that we're somewhat pushing on an open door because people look at us and say, we'd like to do more business with you. And also given, especially our global footprint, there's many things that we can do in the corners of Asia or in Latin America or in countries where others just don't have a presence. We can find a short or something like that, that others can't do, so people at the margin would like to add Citi to their list of providers.

And then the other thing I'd obviously mention that you probably know much better than me, is if you look at the big players in equities, typically, they're very strong in investment banking or they have a big wealth platform or both, right? And those two things, just—and again, veering into your all territory, those two things seem to me to be pretty big drivers of whether someone's big in equities or not. And if you look at what Citi said at Investor Day, it's clearly our ambition to grow both those things to improve our ranking in banking and to materially grow our wealth AUM.

So, we kind of look at it as this is more of a longer-term thing. This isn't going to happen in the next 18 months. But over the intermediate term, as wealth grows and as banking improves their ranking, then just kind of naturally, our position in Equities will rise.

So, those are the, I guess, the big drivers of it. And I guess I would maybe say one other thing, if you don't mind. Because I'm sure sometimes, when people say these things, it all sounds like the future, right? Like we're going to be great in the future, right? We're going to diet and go to the gym and be better.

But I could say, and truthfully, and you can obviously see, we used to be 8, and now we're 5. So, we used to have a different model. We used to have Securities Services embedded within Equities. But Carey and I and Paco, we looked at it and we said, "Really? I mean, does that really make sense? Or is it better to align it more with services?"

And so, we did that. We pulled Securities Services out and we made it separate. We even moved it entirely out of market. So now it's a completely different unit under Paco. We changed our management team. We had tri-heads at one point, and now we have a single head, Fater Belbachir, and that 8 to 5 move, that was, I think, on the order of $800 million last year.

So, we definitely have forward plans and forward ambitions, but I think we could say that even in the last few years, we've kind of made some strides, which gives people some confidence and, hopefully, will give you some confidence that we can continue to march forward in the space.

BETSY GRASECK: So, the workout is paying off?

ANDREW MORTON: Yeah, yeah as they do. It's just a matter of doing it, right? There's no doubt it pays off. You just got to do it.

BETSY GRASECK: The other message I'm hearing, too, is that prime is an important part of the offering, clearly. Prime takes capital. And I guess I'm just looking to understand, not just about Prime, but generally for your business, how you think about capital. How do you think about allocating it? What are the decisions that go into that? And is it—do you have to generate any new capital to reinvest yourself? Or is this something that you can pull from the top of the house?

ANDREW MORTON: No, I wouldn't say we could easily pull it from the top of the house, looking at Mark here. But I think, what we're doing in practice is we're lowering our capital usage, frankly. I think that what we talked about at Investor Day in terms of revenue over RWA is a pretty nice proxy, and it's a good way to think about it.

So obviously, returns are the gold standard. Everyone talks about returns. And returns is what we look at. But in my seat, when you're evaluating a trade or a business line or a situation, returns are not as useful as you might think. Because if someone proposes a trade to me, I guarantee the first thing they'll say is, "Andy, there's no incremental expenses on this trade. Like you just—we're just going to make the revenue and there's no incremental expenses." But there are expenses, right?

And how do you tell what's the incremental equity usage of a modest-sized trade? You just can't, right? We do get the equity allocation for the business, of course, but someone walks up with a trade that they want to do, I can't tell the incremental equity. But incremental revenue? Yes. And incremental RWA? Yes.

So, we're actually using that revenue over RWA guidepost really frequently in the business. In fact, that's their main driving, yes, guidepost, milestone, what have you. And we're telling our transactors and we're discussing with clients; we just want to improve that ratio.

And it's interesting because if you go to a—if I was to go to one of our team or desk head or something like that, and I said, "Listen, I've got this great idea. I want you to make the same revenue, but with less capital, like less RWA." So same revenue, less RWA. They would look at me and they go, "Thanks. That's really helpful. But like how am I supposed to make the same revenue with less inputs? It's just not that easy."

But if you say to them way more constructively, "Look, you can make less revenue, just use a lot less RWA and improve the ratio." It's a way more constructive thing to say, and people get it. And they get that their job is to improve the ratio.

And the same thing happens with clients, actually, because—and one of the things that's been, frankly, quite surprising to us in the last year or so because SACR, obviously, was a defining moment for everybody. But as we tried to do all this, we found a number of opportunities with clients in often extremely straightforward conversations.

I mean the last time I was in New York, I sat down with a good client of ours, and I explained the RWA situation. And I said, look, we're looking to improve the ratio, but that might mean that there's some revenue give up for us that is a spread for them. So, you could be saying to that client, "Look, let's work to lower our RWA with our portfolio with you, but I don't mind giving you some spread." And it could be spread on initial margin that they post with us. It could be returns on an activity they do with us. So that—and again, it sounds so simple, but focusing on that ratio allows you to be far more constructive with clients.

And then there's other things where, look, you just have to widen prices. So, there's some activity that we do that it just—as much as you stare at it, as much as you look at the synergies elsewhere around the firm and elsewhere around Markets, you do all that work and you look at it and you say, that is too low. And then you just—you widen your prices out somewhat.

So, we're kind of doing all of those things. And again, I would—maybe in line with what I said about equities, just so you don't think it's all just plans. With that number I gave you with the north of 25%. So that would be kind of north of 13% for the first half of the year versus last year and we're using less RWA. And that includes going over SA-CCR.

So, we went over the whole SA-CCR thing, which was otherwise would have been obviously a big uptick. And we're using less RWA in the first half of this year than we used last year. So it's really been surprisingly, I would say, surprisingly successful to go on this—I wouldn't say RWA diet—to stick to the previous analogy, but to work on that ratio constructively.

BETSY GRASECK: Well, that's interesting, given the volatility in the market, that you can affect that.

ANDREW MORTON: Yeah. Luckily, the volatility has been volatility more than, say, a liquidity squeeze, right. So, it's very interesting to compare what's happening now to, say, 2008 or other periods. What we're not seeing is liquidity squeezed, is cross-currency basis moving, LIBOR, all these traditional measures of real distress in markets.

To me, and I think to most people, this volatility is just the market reflecting what's actually happening in the real world, right? I mean we have 8.6% inflation. We have commodity prices that are going nuts. You have FX moves. So, the market is doing a very good job of just reflecting those things, but the market itself is not freezing up.

So therefore, that—but it's a very good point. I mean it would be tougher to do what we're doing, and we wouldn't do it, quite frankly, if what we were talking about was a liquidity crisis or if we're putting any stress on our clients. And in fact, if anything when it's higher volatility, it's kind of easier to adjust your positioning, and it's easier to adjust the type of activity.

BETSY GRASECK: Okay. And is that in part because you're—it's shorter dated?

ANDREW MORTON: Exactly. Yes. Many of these trades where we're slightly adjusting our positioning or the size or how active we are, are quite short-dated trades, right. They're just FX rolls or the like. And I'm not—look, I'm not saying it's easy, but to improve returns, is—it can't be that easy or everybody's returns would be much higher.

BETSY GRASECK: So, improving returns through the RWA management. Anything else that you need to do to meet your return goals? Are there businesses that you'd need to close or?

ANDREW MORTON: I think Paco said—I think at the Investor Day, we put it out there that we are targeting getting to 5.5 as the revenue/RWA ratio for Markets. At one point, we're 4.5. We were—by the end of this year, we'll already be more than halfway there. So, it will be north of 5. And you have to say, part of it is due to the good trading conditions this year, no doubt. But he had the phrase, I think, intermediate term or medium term or long term or something. So, to have got there within a year, I think—well, halfway, excuse me, within the year, I think it feels pretty good.

I firmly think that we do not need to and we will not cut major business lines. I think we need to tweak. We need to improve. We need to shut down certain types of minor activity. We need to continue this sort of search in all corners of Markets for revenue/RWA improvements. But the progress we've made so far—and there's plenty of medium-hanging fruit that we can still see in the tree, makes me and the team very confident that we can continue there and get to Paco's goal without any kind of major surgery.

BETSY GRASECK: And is there anything on the product side in FICC that would be things that you're looking at to expand growth or expand sleeves?

ANDREW MORTON: Yes. I think probably the biggest thing—and again, it flows from what's happening in commodity markets, and maybe there's an ESG connection, is we're going to grow and build a carbon offsets business within commodities. There's a lot of different angles to ESG, and we started a little unit within Markets that's responsible for driving ESG initiatives across the piece.

But carbon offset is a business that is a trading business where you're kind of originating the carbon offset credits. You're distributing them. There's huge demand for both. And many of the projects that—where you're creating the credits are really quite good projects for the company to do.

We're doing one now where we're giving away—with a partner, we're giving away free stoves in Vietnam to people in exchange for them shutting down their wood fires. And the carbon credit, thereby generated are enough to fund the whole project.

BETSY GRASECK: Shutting down their—

ANDREW MORTON: Their wood fires that they otherwise would be burning and inhaling the bad air in their lungs. So that's an example that's pleasant to talk about. But more generally, obviously, a carbon offset trading business is one where—and this is important in the trading business. You need to have both sides. You need to have the supply, and you need to have the demand. And you can easily see growth on both sides of that. There's plenty of people, plenty of corporations want to—have made carbon pledges and so on, and, therefore, need to execute on those carbon pledges, and the offset mechanism might be one. So that's one.

Related in commodities, obviously, again, related to the new world situation that we're in, the world needs more liquefied natural gas in Europe. And that takes a lot of financing. Those projects are long dated. The originators of those projects need to hedge. And another thing we've seen recently is challenges in futures markets being good hedging vehicles for these kind of commodity projects. And banks are a perfect hedge provider to these type of long-dated financing projects. And that's the space we'd like to be active in. So, in the commodity space, those are two.

I would be remiss if I didn't—again, not to always talk about FX, but it's amazing that we continue to tick forward at 5%, 6% a year in our corporate revenue in foreign exchange. And that's something that surprised me when I first saw the numbers because you tend to think, "Wow, foreign exchange is just low spread on a screen on Velocity, and you click and you can—it's the fifth digit before you see where the price moves and so on."

But the reality is more and more, we're doing just connections to clients. And in a way, it takes advantage of the fact that the spread is so low, people don't care, and it's not even relevant, right? So, we—where we're making all of our money is just directly connecting our foreign exchange pipes to clients and saying more or less how do you like to have just a single U.S. dollar bank account with Citi and we'll take care of 100 currencies at these pre-agreed spreads. And we show them the spreads, and that's where we deal. And that's a very compelling proposition to a new fintech or a new company that's just getting started that can't be bothered dealing with 100 countries.

So that kind of thing, I think, especially in this era of deglobalization, more FX volatility, people just not wanting to get involved with all these technicalities, Citi's model, we just do all that for them. That's kind of our pitch. So those are a few things where I think the opportunities will continue to grow in fixed income.

BETSY GRASECK: What is the geographic mix in Markets? I think ICG rev is 35% North America, 32% EMEA, 21% Asia, 11% Lat Am. Is it the same in Markets?

ANDREW MORTON: It's pretty much the same. We're actually a little bit bigger in EMEA than NAM. Kind of for no big reason, we've just historically been pretty good in EMEA. And of course, our FX mix is heavily in EMEA.

I think the growth for us there is Asia. I mean, obviously, just in line with GDP growth and the like. I think also, Jane's strategy of more or less getting out of non-U.S. retail that gets us out of retail in all these EM countries in Asia and a little bit establishes us more clearly as a bank for banks and an institutional bank. And so, some of our EM counterparties in those countries would now look at us, "Okay, you're not competing with us in that last mile, so we're going to provide you more transactions."

And I guess the other thing I'd quickly say is when you look at those numbers, you're counting—and of course, we count it that way. If we do big U.S. mortgage trades with a Japanese bank or we do Taiwanese investors buying investment-grade bonds from us or Taiwanese investors buying U.S. dollar-structured notes, all those things would show up in dollars, right, because they're a U.S. dollar transaction. But really, that's an Asian transaction. And that's a Japanese transaction.

So, if you correct for that, that's probably $1 billion of revenues, so 5% of our revenues. So that gets Asia to be kind of 30-odd percent or 27%, 28%. And so, I could easily see—and this would probably be our initiative, we could get to 1/3, 1/3, 1/3 across the big three of EMEA, Asia and North America. And that—I think that's a nice pretty even platform. And then you have the other two of LatAm and Japan, which are a little bit more bespoke.

BETSY GRASECK: So last question here. You've got three Cs here going on. You've got central bank digital currencies, you've got cloud, and you've got crypto. Out of those, which one is most important for you?

ANDREW MORTON: For me—and I don't know if all my colleagues at Citi would say the same, but for me, I mean maybe surprising, the cloud is far, far bigger. We spent a ton of time developing a tech platform that we think is very scalable. It's got a solid backbone. We are able to send all of our compute to Amazon cloud compute and revalue our entire trading book with a small computer program on a handful of lines of code. So, the cloud compute capability where we can send all of our valuations, which are stored in a common database and our trades, which are stored in a common database, to be able to have the capability to scale up and scale down cloud compute, to do that is massive.

And the other two, crypto and CBDC, they'll eventually become significant. But right now, our biggest compute burden is for stress analysis and for VAR and for a lot of applications where we need to revalue our entire portfolio in Markets. And our own capability together with the cloud has made a massive difference in our ability to do that. So, for me, by far, the biggest impact of the three is cloud.

BETSY GRASECK: And that's on both revenue and expense line in helping you get to your--

ANDREW MORTON: Yes, it helps you manage the business far more effectively, and it helps you with regulatory issues. Because you can run your CCAR scenarios quicker. It helps you with stress losses, helps you with VAR and helps you understand the business better. So, for all of those things, the cloud is already making a difference to us, and it's huge for us.

BETSY GRASECK: Great. Well, Andy, thanks so much for your time this morning.

ANDREW MORTON: Betsy, thank you.