Freddie Mac Single-Family Home Starts Here Podcast Episode Transcript:

CONNECT 2020: Makes MEDA Sense

Announcer Welcome to the Freddie Mac's Single-Family Home starts your podcast, your connection to all the latest industry trends, insights and points of view on the mortgage market from Freddie Mac leaders and other industry experts. We'll be coming at you from the 2020 Freddie Mac CONNECT conference, where you can catch exclusive episodes throughout the event.

Liz Mugavero Thank you for joining Freddie Mac Single-Family Home Starts Here, podcasts. I'm Liz Mugavero, your host, and I am really happy to be here on this special edition of today's podcast. Today, we're going to talk about data. But I promise we're gonna make it exciting. So, there's no shortage of data in the mortgage finance industry. As we all know, the pace at which data is generated and collected is multiplying exponentially. Enabling technologies to effectively leverage the increasing data volume for better decisioning is key to moving the mortgage industry forward. Predictive analytics have revolutionized how the mortgage industry does everything from analyzing data to inform a decision to portfolio performance forecasting. They used to project interest rates, mortgage rates, house prices, unemployment rates, defaults and prepayments and other key outputs that determine our business success and viability. But what happens when a global pandemic throws is the models out of whack? What's the potential impact on a good risk framework? In this episode, we're going to explore how the industry can best use data as a tool for long term business growth and preparedness.

Liz Mugavero My special guest today are two experts in the mortgage industry when it comes to risk management and data science. Today, I'm joined by Cliff Rossi, professor of the practice and executive in residence at the Robert H. Smith School of Business, University of Maryland, and Michael Bradley, Freddie Mac's senior vice president of Modeling Econometrics Data Science and Analytics here in Single-Family. Welcome, gentlemen.

Cliff Rossi Thank you, Liz.

Michael Bradley Welcome Liz.

Liz Mugavero So, I'd love to start by just having both of you introduce yourselves, share your backgrounds a bit, and you talk a little bit about how your career paths have intersected over the years.

Cliff Rossi So I like to tell people I'm a recovering chief risk officer masquerading as an academics, these days. I started my career off during the SNL crisis of the 1980s where I think I first met Michael actually at the Office of Thrift Supervision a long, long time ago and ended it during the financial crisis of 2008, where I was managing director and chief risk officer for the consumer lending division up there for Citigroup. So, it's been quite a ride. I squeezed in a 10-year stint with Freddie Mac and Fannie Mae, both on the Single-Family side of risk and a couple of other institutions along the way that that were probably all familiar with. Michael…

Michael Bradley Yeah. Thanks, Cliff. So, I began my career. I was trained to actually as a micro theorist in economics. So that means lots of math and sort of theorems and proves and that kind of junk. But then I started off by teaching at the

University of Colorado at Boulder and fell in love, married a wonderful woman who I'm still married to but she is a geochemist and not long into my stay there, there was the oil shale crisis. So, after she finished her postdoc, she couldn't get a job. So, then I moved to the Board of Governors where I became a thrift economist, not knowing what a thrift was and not knowing anything about mortgages. So, I was really drinking from the fire hose. After a couple of years at the Fed, I joined OTS treasury as part of the lead up to the fire REO, which was the law that finally resolved the thrift crisis. After that, I came to Freddie for the first time for 11 years. I was part with Cliff and others building what was then known as Loan Prospector, which was the predecessor of loan product advisor, which is our front-end scoring model plus H.V.E, AVM and other things. And then I went off to a money center bank for about seven years. I worked at a data company leading their modeling team and rejoined Freddie Mac again in 2015, the lead up models for the Single-Family business.

Liz Mugavero Thank you, both. Very distinguished careers and it's great that you both have a chance to come back together and share some of those learnings. So, let's start talking about data and all of the things that have been going on lately. So, in the last few months, it's really been challenging to make sense of how this pandemic followed by, you know, Federal Reserve actions, fiscal policy responses, forbearances, moratorium on foreclosures, has affected models and businesses overall. Can you can you both talk a little bit about how these macroeconomic factors have had an effect on the reliability and stability of models?

Cliff Rossi So, Michael, I guess I'll step off first here on this one. And first thing I'd say is that all models are wrong. And as long as you understand that at the outset, you know, you'll be in good shape because you need to have both this balance of art and science to manage models, particularly in an environment that we're in today where they just weren't equipped. Most of our models are based off of historical information. And as a result, those models are only as good as the information that you feed into them. So, who's seen a Covid -19 type of pandemic coupled with the monumental amount of monetary and fiscal stimulus that's been piled onto it since then? And then naturally, the consumer responses or not from those kinds of actions. We haven't. Even go all the way back to the 1918 pandemic. And so, our data's pretty thin on that. So, given all the uncertainty around that, I think it's prudent for companies to run a series of scenarios, you know, under a variety of different assumed outcomes, things like, you know, what happens if there's an announcement of a weak vaccine, a very maybe ineffective vaccine? In Q1 or Q2, or pushed out the Q3, what impact would that have? Maybe if a kind of a no vaccine scenario, worst case kind of scenario and then any scenario, look at the economic business and risk impacts net of any stimulus would need to be factored in to see sort of how it impacts things like loan loss reserving or forecasts. But I still come back and say these models in today's world must be guided by good judgment and qualitative adjustments in order for them to be used effectively.

Michael Bradley Cliff nailed that part right, models do a really good job as long as the data that is being fed into them is consistent with that kind of data that was used to develop them. But as soon as Covid started to take off, it was like, Houston we have a problem. this is going to be a black swan. Something completely unprecedented in our experience and the data. And so, the trick was what kind of data and analysis can we perform to provide what are called model overlays? So, you know, adjustments to the models so that the output from those models allow us to continue to achieve our mission as Freddie Mac, you know, providing liquidity, stability and affordability to the housing market. That only exists if the heartbeat of the company, which were really the models, continued to perform as you want them to perform. So, it wasn't just Freddie Mac or any of the GSE as it was, all mortgage models faced sort of an immediate dilemma. And so, what we did was we went back to past events. Luckily, in some sense, from a modeling standpoint, the Great Recession wasn't that long ago. So, there is a lot of muscle memory there and some good analysis. But as Cliff mentioned, during the Great Recession, unemployment spike and house prices declined dramatically. That's not happening now. You know, we saw a big increase in unemployment, but house prices of anything can have continued to rise. So, we turned to real-time data on, you know, restaurant reservations, hotel reservations, travel and information, sort of traffic patterns within cities. We linked up with money center banks and investment banks who have similar kinds of models to say, you know, what are you seeing? What kind of old ways are you going to put in place? What are you predicting house prices to be and the like? So, it's sort of like a coming together of sharing the pain in some respect. Right. What we've all got a dilemma on our hands. How can we help each other learn from what we do? And then how do you also learn for the future? Now, one of the things that we have learned through this pandemic is there are certain models that do a really great job. Right. Those based on machine learning tend to use a lot more input and they get rebuilt a lot more frequently than traditional statistical models.

Those models seem to have made it through without a lot of need for many overlays, unlike traditional statistical models, so that bears for those kinds of models going forward. And I think that was really important. The other thing is with the data is that there's been a tremendous move towards digital. Right. Whether, you know, appraisers didn't want to go in the homes, people them would have appraisers in the home. So, we've been using a lot of appraisal waivers. You know, income. OK. How do you get somebody whose income when they can't physically give you their pay stubs and W2? How do you close or how do you record something when the county courthouse is shut up? Well, all these things have caused, you know, more than five year jump ahead in digitizing the entire mortgage. That's great from a quant standpoint. All that digitization means more data, which you get the feed into your models. So, at the end of the day, there's you know, we're making some lemonade out of lemons that we've been handed. And it but it's you know, there's no doubt that it was a trying experience.

Liz Mugavero Absolutely. It sounds not only can data help build your business, but it also can help protect the business. But you just have to understand the limitations and the assumptions as your as you're looking at modeling in an environment like this.

So, Freddie Mac recently celebrated a milestone anniversary, we celebrated 50 years in business. And, you know, it's really interesting to think about how data and analytics maybe was 50 years ago versus how it is now. Can you guys talk about how data and analytics have evolved during this time, particularly with what you just mentioned, Michael? The you know, the introduction of automated underwriting, things like ACE and being able to do virtual appraisals and that sort of thing.

Cliff Rossi The first comment I'd make is I don't think Michael and I have been around 50 years at Freddie Mac, but we do have a lot of combined experience. We probably have better than 50 years together, right, Michael? Early days alone prospector were a sight to behold in my mind. It was, simply put it, revolutionized mortgage underwriting. Fannie came very quickly afterward with desktop underwriter. It was, in my opinion, a major leap forward to applying what we more broadly refer to as artificial intelligence type techniques, as crude as they may seem today to learn decisioning and continue to do in the form of automation of collateral evaluation processes that Michael's been involved with from day one, basically at Freddie Mac. That's the good side of automation. The downside is that can incent the wrong practices If you're working off a full documentation types of loans where you know the income is rock solid, then perhaps your statistical estimates are going to be much more robust than they are. If you start to, as I refer to it, product morph change products so that, yeah, we used to do full documentation, now we're doing streamline documentation and now we're moving into more of the classic low or no documentation. Your data starts to get polluted and that also then adversely affects your models] and your decisions that you make off that. So, you have to be careful with that. But when we put the LP out there for the first time we were working, we did it in a smart way. We brought quants together with business folks, with QC folks with underwriters, put them all out in a mortgage underwriting, competitive vantage team setting and said, you guys figure it out. And we did. And I think it] set the industry on fire from that on in terms of how the loan manufacturing process really works.

Michael Bradley Just a reminder that, you know, Freddie Mac was the leader when it came to introducing automated underwriting and in a massive way to the mortgage industry. We had a bunch of modelers, again, with business people working on this. it's unbelievable how much the world has changed since then.

Michael Bradley It took a lot of heavy lifting to get it; a lot of debates, you know, blood, sweat and tears to get known prospector out the door. And it really did revolutionize how underwriting is done in the market space. At that time, I think that Freddie probably had about two hundred and fifty underwriters [And if you look at the number of underwriters we have now, it's completely different. So, the important thing that what loan prospector and our other major models have done for us. It really allows us to do things at scale. But, Liz, when you talk about the data that we had, then it was a credit bureau, data and data off the loan application and stuff like that it was really minor compared to the massive amount of data that we have now where we get data off appraisal reports, MLS feeds public record data, you know, closing feed, closing data sets. Soon, ULAD.

Michael Bradley I mean, all this data that we have, you know, the data we had to build those models pales in comparison to what we have now, which means that we can make better predictions and better predictions allow us to make better business decisions and better business decisions, allow us to meet our mission, which is, you know, again, to provide liquidity, stability and affordability to the housing space. So, it's good that we continue on this constant evolution those evolutions come in major jumps at time. And the types of models that we can develop and the types of data we can leverage. But those steps are all making it much easier for us to understand which loans, which borrowers meet our manufacturing specifications and lower the cost to our clients and our borrowers. And just making life easier for everybody.

Liz Mugavero Absolutely. There's been a ton of innovation over the past 50 years, and it's certainly something that we're still hyper focused on moving forward. And Michael, you just mentioned our mission, so that's a great segue into my next question. So as part of our mission, you know, affordability is key. We're always focused on providing affordability to the marketplace and making sure that we make home possible for as many people as possible. So, how can we better use data and innovation and innovative thinking to impact affordable housing?

Michael Bradley If you think of AI machine learning kinds of techniques that are being used more and more in the mortgage industry, these can consume a lot of different data. Then not just more data, but different kinds of data. data in regular columns like they used to use in the old mainframes. Right. It's the unstructured data that's really exciting: pictures, text and those other things. You know, interpreting bank statements, interpreting paystubs, W2, OCR, those things that allow you to extract data from, digital feeds or, you know, physical documents. That's really advancing things. But it's also allowing us these same techniques are allowing us to really advance how we do our fair lending analysis. And they're allowing us to build models that are not only more predictive, but they're also fair. So, it's hitting our mission in a number of ways in that we are really advancing the mortgage space because we're making more predictive models, making hitting our true mission. But also, our mission is, you know, really to make that happen, to be the leader in housing. You can't just deal with, you know, affordability, liquidity and stability. You need to deal with equality. And so these techniques are allowing us to attack that equality issue and take it head on. And we're very, very excited in the fact that these algorithms and methods are allowing us to not only get more accurate models, but also models that are fair. And by that, I mean give better treatment towards protected classes.

Cliff Rossi I agree with that, Michael. I think one of the things, too, that's very exciting that's going on is around trying to better address folks with nontraditional credit histories. And we over the years. struggle with that. That you have bought a lot of borrowers to just either, for whatever reason, have thin files, then information and don't use credit very much or no credit at all. And so how do you actually serve those markets when you are used to using things like credit scores and disaggregated credit information in those automated underwriting models? And so, looking at rent payments, utility payments, mobile home payments can really kind of help along with other types of information. I know that you and your folks there are kind of making strides along those way. So that's a big deal.

Michael Bradley Yeah, it's great. Not just us but the industry at whole, Cliff. All this is really great information to deal with people that may have thin credit in the traditional sense that we have it, but they're definitely credit worthy. They've demonstrated that they take on obligations. They meet those obligations in a timely fashion. They're responsible. And we can add special segments within our front-end scoring model that we deal with thin file. And so, what we're able to do more because of the additional data that we can access for certain segments of borrowers that we [before] could not handle.

Liz Mugavero That's awesome. And it really demonstrates how seriously we take our mission. So, I'd love to wrap up with just three critical takeaways that you both want to make sure our listeners are walking away with after they listen to this episode.

Cliff Rossi I'd go ahead and say one that I think is out there that's near and dear to my heart is, you know, sophisticated analytics and data are here to stay. They continue to be harnessed for business and risk decisions and they are not going away. But there is an art and science to it. I tell my graduate students all day long, we can turn you into, you know, great

technicians. But to be a great analyst and using and harnessing the best of data and models really comes with both the judgment and the technology. So that's one big one in my mind, the balance between art and science.

Michael Bradley Yeah, I'd say that, you know, certainly the insight from data are revolutionizing how the mortgage industry operates and those better predictions from the data and insights that allow us to make better decisions and allow us to scale in unprecedented ways. But to Cliff's point, you know, models alone can't be counted on for predictions, especially in unusual circumstances or black swans like Covid. The human judgments always gonna be critical. And as I like to say, you always going to need to have an adult in the room so you can't just rely somebody pumping out some algorithms. Isn't this great? You know, unless you understand the limitations and the sensitivities of the different things that you're doing, you're not going to know when they're going to work really well and when they're going to fail you. And when they're not going to work well is when you need to really be fully engaged to make sure that they're giving us the kinds of decisions we need to fulfill our mission. One of the really exciting things, if I could, Liz, about this Covid experience That Freddie Mac was integral and in keeping the mortgage market operational. And keeping borrowers in their homes through our forbearance programs. helping them keep them in their homes with some of our modification programs that we put in place. All these things that we've done has helped. And digitization and the new tools has helped this market from seizing up, allow it to continue to operate, efficiently. People are buying homes, they're refinancing at lower rates. We are providing that sort of stability to the housing market. That is our charge. And, you know, as we exit conservatorship, we think we're ready and poised to be the leader, not just in homeownership, but in the] housing sector, generally.

Liz Mugavero Excellent insight. Data really is the future of our industry. I think you would both agree with that. And we're very fortunate to have people like the two of you helping us determine the best ways in which we can harness it. So, thank you both for being here. A special thank you to our guests, Cliff Rossi, for joining us today. And thanks, as always to our listeners for tuning in. Remember to subscribe to Home Starts Here wherever you listen to your podcasts and share with your friends and colleagues. Talk to you next time.

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