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In this edition of our recurring series of interviews, Ana Rojas Silvero, a PhD student at the Graduate Center, interviews Dr. Julapa Jagtiani[1], a Senior Economic Advisor and Economist at the Federal Reserve Bank of Philadelphia. The two discuss Julapa's recent research on Fintech Lending and Alternative Data and look back at Julapa's own experience as a PhD student and as a scholar. At the end of the conversation, Julapa's provide some advice regarding choosing the correct topic for a dissertation paper and how it will impact our future as researchers.

AR - Thank you Dr. Jagtiani for joining us today. In this interview, we are going to go over your recent research and also, some of your experiences as a researcher and as a PhD student. Last week you give us a very instructive presentation about "Fintech Lending and the Roles of Alternative Data". I wanted to invite you to give me a short elevator pitch of the role that fintech and alternative data have in the financial market today. What are the major messages that you would like to convey with your research? Why are they important?

JJ - Yes. So that's a very good question that you asked. Fintech lenders: first, let's talk about fintech lenders. We are not talking about online lenders because when we are talking about all online lenders there are lot more than fintech lenders. For example, when you you apply for a credit card, it's all online. Sometimes you get the approval in one minute or even less. But that's not in my view, that's not in my definition of fintech lenders. When we talk about it, we are talking about using more data, specifically nontraditional data combined with more complex modeling to identify borrowers who may not have had access to credit otherwise. I think I said during the presentation last week that, if we go to a group of subprime borrowers with very low FICO score, so we know that the default rate is very high, say maybe 50% default rate as opposed to 2% if you make a loan to prime or super prime

borrowers. That is still a small amount of default rate, 1% or 2%. We can say 50 people out of 100 of subprime borrowers would default but half of them would not default.

If we use more data and more modeling to understand their complete financial situation, much more than what the traditional data could provide and more forward looking, we could allow more people to access credit without hurting anybody. Because, assuming that we are able to use better technology and better data, we can identify what we call the invisible prime, people who are subprime by traditional measures, but who are not actually likely to default. So that's why we think that if we use this alternative data appropriately, without violating consumer privacy, providing enough protection to consumers and interpreting correctly model results; if we do all this correctly, it could potentially allow the estimate of about 26 million Americans who now do not have access, to have access to credit on banks. If you look at around the world, it would be around 2 billion people. We could improve their life without hurting anybody. That sounds good, doesn't it?

AR - Yes. These are the opportunities for consumers, but what are the drawbacks that they will face in this new world of alternative data and fintech lending? It is more convenient, but we know that it is also riskier…

JJ – Okay, so that's another good question. It could potentially expand credit market and billions of people could have access to credit, but there are drawbacks as you said. Generally, when people apply for a loan, as I said last week, they will check the box allowing lenders to collect more information about them and, of course, fintech lenders have technology. They are able to go and grab your data from many different sources within minutes. Actually, they can have a full picture of you, about you, your financial situation and they can make a decision.

But the risk is that that information may not be something that you want to share with some people, and it may not be fair actually. So, we have consumer privacy because consumer protection is something that the CFPB, the FED and regulators are looking at. Data might be misused. Who owns these data? These are information about us that someone else has access to. We don't even know what information is there because every time we access a website, they (fintech companies) collect many variables about us. We don't know what is in there and if it's accurate or not. If it's not, then how do we correct the information for that URL?

Also, there have been some concerns about whether these people (consumers), all of them, should actually have access to credit because sometimes it's good for them in the short run, for sure, but for some of them, it may not be good in the long run. They may be overextending the credit, and they may be too leveraged and may not be able to pay back the loan in the long run. It depends on what they use the loan for, of course. If, say, it is a personal loan , if they need to pay for emergency room or something that is just really in need for cash, this is a great way to access funding because they will not be able to get it from a traditional bank and not so quickly.

Credit cards: if they have credit card at all, many of them actually borrow from fintech lenders who pay off credit card balance to save the interest costs. So, yes. Besides having access, some of them use it to reduce their funding cost because interest on credit card is very high, particularly those who have low FICO score. They are what we call the invisible prime, and they could get much lower rate from fintech lenders.

AR - Okay, so what is the role of supervision and the role of central banks as supervisors in particular?

JJ - The role of central bank is…and actually of all regulators, we all have to adapt to this new landscapes, high tech landscapes. We have fintech conferences at the Philadelphia FED each year. Two years ago, we talked about some estimates, how the amount of data that was collected in 2016 double the amount of data collected around 10 years before that. But when we looked at the data collected that year, it actually doubled what was collected the previous year. It shows how much exponentially more data has been collected.

That data is useful, it's a new world now with so much data been used. With any app you use, they (fintech companies) collect a lot of information about you and you don't even know what other people know about yourself. Data vendors have been created after the previous financial crisis, and not just fintech lenders but all kinds of fintech startups as data aggregators and AI vendors. Many of these firms are also providing services to banks, so besides protecting consumers, the Fed also ensure the safety and soundness in the banking system.

Deposits are insured. We do not want banks to make really bad risky decisions using data from these vendors. We want banks to understand what is behind someone's score, what is inside this black box. Different vendors have their own model, their own algorithm and their own data, and they do their

own evaluations. Banks use this information to make credit decisions, but some of them, particularly smaller banks may not fully understand and may rely on these vendors who help them with the technology. That's why we need to adapt, to come up with new guidance about how to manage that third-party vendor risk and how to manage this amount of information, to make sure the standards are maintained so that banks can make good decisions.

AR - Based on your experience, do you think that computer engineers are developing these technologies, these algorithms much faster than what we financial and economic researchers can keep track with our investigation?

JJ - Well there are the two strands of research. One is empirical modeling and analysis, and another one is the theoretical modeling as game theory. I think both strands would lag behind what's going on in the industry. I mean, if you come up with a new technique like option pricing or new ways of asset pricing, that could be useful. But data come from industry. I think usually research lags behind that.

For example, regarding fintech, you are right that so many things are happening, and we don't know what the real impact is for sure. There are many deep questions that we still need to explore. Fintech come up with models, spitting out scores. We don't know everything that is inside that black box. Nobody really goes to review and examine their models, so it is difficult to tell.

Some of them are also taking risks in this economy with this pandemic that was not expected. Of course, it was not in the model, so some of the leaders are not doing so well. But there are some others that actually are doing better than traditional lenders in terms of default. To say that it is because they use better models is difficult. Models did not incorporate, for example, the fact that all hotels and restaurants will be locked down, will be closed. Nobody knew that. So, at this point I think it's just luck.

To conclude, I think you're right that so much is going in the industry that we don't fully understand. We can't really do research on all of them to fully understand and to evaluate the accuracy in new ways of pricing risk.

AR - Last week, you gave us many examples of potential research questions. We want to know, how did you become interested in this area in the first place? when did you start working with fintech and alternative data?

I was one of the very first few people who started doing this and I started a long time ago. I just thought it was interesting, it is just intriguing to hear about. Let's see…the person who introduced me to fintech was my first paper coauthor Catharine Lemieux who was running banking supervision at Chicago FED. I was at the Chicago FED before, so we have been friends for many years.

We were working with small business lending and how small banks have been doing less and less small business lending compared to large banks and non-banks and we were looking at they and said "Wow, that's so interesting! Why are they moving out of the banking system?" Then we realized that, "oh, actually, this is Kabbaga, OnDeck, Lending Club", they were all these firms. We got excited about that and we wanted to learn more, so we wrote a summary that was published in the Chicago FED perspective. That was in 2015. That was before Lending Club CEO left his firm in 2016. They were very interesting times for us.

We kept expanding our research work. I've done not just personal lending, but also small business lending by fintech lenders and also mortgage because fintech has been expanding into mortgage and small business lending as well. It is very interesting.

AR - Sometimes as PhD students we struggle with finding the correct working method. For example, how to keep track of ideas, how to pick the right one, how to move forward with it. Do have a working method? Do you have a process that you follow to have an interesting output after a certain period of time?

JJ - I can give you some suggestions that I think would work well for you. First, I guess you would want to pick an area and you also probably would want an area that have some specific professors that you would want to work with, who has time and willingness to work with you. Because you would need guidance throughout. If you have someone who do not have time, then you would have to combine him with someone else. Someone who is willing to be on the committee and who has more time to discuss with you and guide you more often. Maybe then you will be able to meet more frequently.

So, once you decide on the area, then you can actually go on reading a lot of topics and find some research questions that you are interested in, and that people have not answered yet. It has to be something nobody has done, but you can also add to what people have done before. You can use different data to add new findings. Also, data has to be available. You need to be able to access the data. That could be another obstacle. If you don't have access to the data, you can't get it done. Maybe if you get the right professors, they can help you to get access to the data.

Once you have the data, start working on it. I would say that you will get disappointed many times when something does not work out. You will have obstacles here and there, but you just have to be persistent. How to move? Do it quite fast. Don't delay for too long because if someone else starts working on it and come out with it before you then that will be a problem.

AR - These are very good advice.

JJ - Once you start presenting at conferences, then it's out and it has your name, then you're quite safe. The work doesn't have to be finalized but you have to start sending it out.

AR - Going back to your time as a PhD student. What was the topic that capture your interest during your PhD? Where did your big question come from? Did you just stumbled on it or it was something that you were thinking for a long time?

JJ - I did finance in NYU. I chose to do banking and financial institutions. Partly because of my personal interest. When I was in Bangkok, in Thailand, my parents put money as saving in some non-bank institution that had much higher interest rates and then it (the institution) failed. The deposit wasn't guaranteed, wasn't insured. It was really bad for us because we lose so much saving, so that kind of experiences gave me a strong interest in this deposit insurance and banking system safety and soundness.

The research that I was working on was not so much on moral hazard and the party insurance related, it was on banks' activities on using interest rates swap. At that time, in in the 1980s, interest rate swap was a new instrument. My advisor was also very interested in my research. We actually published a jointly research afterwards.

AR - What were your major challenges as a young scholar? How did you overcome these challenges? Maybe you can give us one example.

JJ - The challenges are basically the same for all of us. Basically, it is finding the right area that you are interested in, and you are comfortable working on. People are good at different things. You have to discover what you're good at and what you're interested in. Not everyone is good at options pricing or game theory. You have to choose what you're good at and it could take time for you at the beginning to figure out what it is. You cannot be an expert on everything. It's just too much. The key is to enjoy what you are doing because it's going to be for many years.

AR - This is my last topic for this interview: Since you worked first in the academia before moving to the Fed, could you give us some insight of how different is to work in the quasi academic environment as the Fed as opposed to work in in the academia in terms of developing research ideas? As students we have to figure out where to go after.

JJ - In terms of academics versus industry or Federal Reserve, well, it all depends on your dissertation. It will determine partly where you are going. The jobs imply different lifestyle because in the academia you teach a few days a week and you get the summer off. You are under a lot of stress to get a tenure position in the first six, seven years. It's a lifestyle choice.

At the Federal Reserve, we have to go to work five days a week and we have a boss. Our research tends to be more directed. Some people have more freedom to choose and some have less freedom but generally our research has important policy implications. If you are interested in that, then it's good but you don't have the whole summer off and you're not in the classroom. Industry is also different, but people actually switch, go back and forth between Federal Reserve and industry.

AR - That was my last question, it was great to chat with you.

JJ - I hope that it was helpful.

AR - Yeah, it was. Thank you Dr. Jagtiani for being with us in the seminar last week and thank you for talking to us today.