This webinar was given by M-RCBG research fellow Ignazio Angeloni on Friday, April 23, 2021. Co-authors of this study include Chantawit Tantasith and Johannes Kasinger. The seminar presented preliminary results of a project analyzing whether bank behavior and performance help explain recent patterns of poverty and inequality at the local level in the US.

Scott Leland:
Hello, everyone. Thank you very much for joining us today. My name is Scott Leland. I'm the Executive Director of Mossavar-Rahmani Center for Business and Government, which is hosting today's event. We're very happy to have Ignazio Angeloni here to be our main speaker. He is going to be talking on the Financial Factors in Regional Poverty and Inequality. Before I say a few brief words of introduction, I'd like to remind people to please use the Q&A feature at the bottom of your Zoom screen in order to submit questions and we'll be addressing those after Ignazio Angeloni has gone through his initial presentation.

Scott Leland:
Ignazio Angeloni has a PhD in Economics from the University of Pennsylvania. His thesis was actually on economics and econometrics. He has worked in Italy's Ministry of Economy and Finance as the Director for International Financial Affairs. He's been the Deputy Governor for Italy in the World Bank and the European Bank for Reconstruction and Development and the Asian Development Bank and the African Development Bank. In 2014, he was appointed a member of the European Central Bank supervisory board with a five-year mandate, ESL teaching positions at the University of Pennsylvania and various other institutions. He's published books and articles and top US and European academic referee journals. He's served at the Mossavar-Rahmani Center for Business and Government as a senior fellow and he's currently a research fellow as he continues his research at our center. We're delighted to have and welcome back to the podium Ignazio Angeloni. Thank you very much and it's over to you.

Ignazio Angeloni:
Many thanks, Scott, for this introduction. Good morning everybody, or good afternoon if you are in Europe like myself, and thanks a lot for attending. As Scott mentioned, we are presenting preliminary results from a research project that has been ongoing for a while on Financial Factors in Regional Poverty and Inequality in the United States. You can see the authors there, in addition to myself is Chantawit Tantasith, who is a PhD candidate at Oxford, and Johannes Kasinger, who is a PhD candidate at Goethe University Frankfurt. Before I start, let me mention that we’re very grateful to the FDIC’s economics department, in particular to Eric Breitenstein, who I think is with us today, for their very helpful support in using their data.

Ignazio Angeloni:
The starting point, at least for me, the starting point of this project was when I read this paper that you see there, is a paper by Austin, Glaeser and Summers, it’s a 2018 Brookings paper. The title is Jobs for the Heartland: Place-Based Policies in 21st Century America. In that paper, which is a very interesting one, I recommend everybody to read it. They made essentially three points. First, they show very interesting evidence on the growing spatial divergence in the US economy and the US economic performance in different regions. Second, they suggest that this is a case for having space-based policies. Space-based policies means policies based on location and not based on people. This is something that the US doesn't have historical. Europe has a space-based politics but the US traditionally has not used these policies. The argument is based on spatial externalities. The idea that the within a
certain region there may be externalities which do not go beyond the region and not depend on interaction among people but on people being in that particular location. Finally, they make some suggestions on what these policies can be and they mention in particular employment subsidies, job counseling, and education.

Ignazio Angeloni:
Now, one of the things that struck me about this paper and also the rest of the literature, which is quite large now, the literature on poverty and unemployment and inequality in the US is that financial factors are not considered at all. Yet there are several strands of literature that suggest that finance is an important co-determinant of economic growth and economic performance. Think for example, about the finance and growth literature summarized, for example, by an article by Levine in the 2005 Handbook of Economic Growth, or there is also evidence that financial development affects inequality, actually reduced this inequality and poverty is an article by Demirgüç-Kunt and Levine in the NBER working paper 2009. And there is also a different literature, which is usually referred mainly to monetary transmission analysis, which suggests that banks established lending relationship with their clients and by establishing those lending relationships they help the borrowers, they shelter the borrowers from shocks.

Ignazio Angeloni:
The general implications of this literature, you can read in the bottom of this slide, is basically, first of all, financial development increases growth and reduces poverty and inequality. This is not an unanimous conclusion, but it's the prevalent bottom line that emerges from this literature, so financial development is helpful. Small banks tend to establish closer lending relationship with borrowers in particular firms. It protects them from adverse shocks and therefore promote sustainable economic growth. And also there is evidence that banks that have a stronger balance sheet, by stronger balance sheet I mean they are better capitalized, they are more liquid, they have less non-performing loans, lower costs, more efficient, et cetera, those stronger banks are able to perform this function better and so they are more beneficial to the economy that they serve.

Ignazio Angeloni:
So can we put these two literatures together? Let me mention that there are, in addition to these interesting analytical issues, there are also major political agendas behind this. I'm sure most of you are familiar with the support in the US for regulatory relief for community banks, which I think has already produced a number of legislative initiatives in the last few years, supported in a bipartisan way towards relieving the regulatory burden for community banks precisely based on the idea that these banks are more helpful for the local communities. In Europe, we have something very similar. There is a small banking box agenda in Germany and in Italy there's a lot of political support for lighter regulation for cooperative banking sector. The corporate banking sector in Italy is composed by a myriad of very small banks that are very deeply rooted in the local community and they have close ties with the banks, so this is also a political issue.

Ignazio Angeloni:
We focused on four questions. First of all, there's a general question which is, is there a link between banking conditions, when I say banking condition I mean both the structure of the banking population and also the performance structure and performance between banking condition and economic conditions, particularly poverty and inequality at the local level. Is there a relation regardless of whether
the causation goes in one direction of the other. Now, of course, however, most specifically we are interested in looking at causality, we are interested to see if banks affect in a causal sense the economic performance locally. We are also interested in seeing where the performance of banks or the structure of the banking sector, and we will see exactly what I mean structure, affect local economic conditions in a different way, in a particular way. And also in particular, whether the banking population structure in tending the presence of community banks. I think there's particularly interesting in the US case, whether the presence of community banks is helpful from this point of view.

Ignazio Angeloni:
This is the US map, as you can recognize. There are 50 states, there are 3000 plus counties. Counties are very different in terms of size in particular, as you can see the western counties are bigger on average than the eastern counties and they are also very different and that's the point in terms of their economic performance. There is a lot of disparity, a lot of divergence, even within states. There's a fascinating book by Moretti of Berkeley, is titled the New Geography of Jobs, which shows that even in very rich states, for example, like California. I'm very, very close, for example, to the Silicon valley, which is probably one of the richest places on earth. A few miles away there are deep pockets of poverty. Why do I say that? I say that because doing an analysis like the one we want to do using only state data is not adequate because the real diversity very often is within state, so we need to go more detailed, more desegregated. The natural choice is the county level analysis. As I said, there are 3,142, according to my latest counting, counties in the United States.

Ignazio Angeloni:
This is a natural way also because the economic and social statistics are available at the county level. This is a natural type of desegregation. The problem in doing that is that the banking data at county level do not exist. We looked around and we thought that we should construct this data and what exists in particular are very detailed databases maintained by the FDIC, the Federal Deposit Insurance Corporation, and there are in particular two very important databases that we use. One is at the level of banks, a very large number of detailed indicator at bank level. So not geographically desegregated, but at the level of banks. Then there is another database on deposits only, only on deposits, annual data. The balance sheet indicators are quarterly. Deposits are annual data which include the deposit location at the level of each branch. Using the information, deposit location at the branch level and using of course the information of the location of the branch one is able to reconstruct the amounts of deposits held in each county. After that, our strategy is to use the deposit location to estimate the balance sheet indicators at the county level.

Ignazio Angeloni:
Now, this is an estimate, these are not real data, so there are caveats there. The critical assumption that we have to make is that the deposit location is a good proxy for bank asset allocation. There are a few papers that consider this problem. One is by Avery, 2004, and they use more or less the similar methodology, so they use the deposit location as an indicator. There is also a robustness analysis which was done by the Philadelphia Fed in a 2018 paper, in which they show that there is a reasonably good correspondence for at least part of the banks. They do a pilot study, they don't have the full data on assets, but on the pilot study on certain categories of loans they find the good correspondence between the location of deposits and assets. But as I said, this is a hypothesis and it's an approximation, but it's the best way he can do it because there's no other way to estimate given the present state of the statistics to estimate the asset location at the county level. So this is what we do.
Ignazio Angeloni:
We have a methodology here. I don't want to go through the details of this, but basically we have to do it in two steps. First using the deposit we allocate the assets, so the total size of the balance sheet of each bank and the second step, we use the estimated assets to break down a number of indicators like efficiency, non-performing loans, or return on assets, et cetera. You will see. Why do we need two steps instead of using deposits directly? Well the reason is simple, because banks have very different deposit-asset ratio. Some banks fund themselves fully with deposits, other banks fund themselves in different ways. So when we calculated the level of individual account is the weighted average, in order to calculate the indicators we want to use the total size of the balance sheet and not the deposit-only because that would be misleading. So the deposit-asset ratio we want to let out, and that's why we use the second step the estimated assets totals.

Ignazio Angeloni:
What we have done so far, we have calculated about 25 indicators for six years. The six years are 2000, 2005, 2010, 2018, '19 and '20. Now these years are not chosen at random. The last one, 2020 is the last one available and it's particularly interesting because it's a post-COVID year. We have not analyzed that yet. We do have the data, but we have not analyzed that yet. What we're going to show in the seminar is '19. '19 is the last pre-COVID year and it's also, I think, a very indicative year, the performance of the economy was very good, et cetera, et cetera, but it's the latest pre-COVID year that we can have. Then we have '10, '10 is an interesting year because it's a post-great financial crisis year. As you will see the big unemployment levels, et cetera. So it's a particular year. It's maybe the first year in which the great financial crisis fully manifest 2010. 2005 is a pre-crisis year and 2000 is the beginning of the decade, of the century, so to speak. So we have these six years as an example and we'll show today.

Ignazio Angeloni:
We will show here some descriptive charts for '19 and some preliminary panel estimates using all six years that you will see. Now, our follow up is first of all, to complete the time dimension, so to estimate every year from 2000 to today, and to do full panel analysis, dynamic panels with all the controls, et cetera, and to work on exogeneity. As you will see, we can make a quite strong statement about correspondence of certain relationships, but we can make no statements about causality yet. And then of course, we're very interested in the last point to see what 2020 has to tell us in terms of the effects of COVID on all the variables that we consider.

Ignazio Angeloni:
Here you see some descriptive statistics for all the indicators that we have. They're quite interesting numbers, I have to say. I don't have time to go through all of them, but let me just mention the first few lines. The first line, for example, is the number of banks in operations. This tells you how many banks operate in each county. The minimum as you would expect is one, the maximum, as we learned from the last column is 104. The county that has the largest number of banks operating is 104. The mean is 8.2, so 8.2% on average. Now the second line tells us the number of counties in which each bank operates. That sounds the same as the first, but it's different. The population is the banks now and in how many counties they actually operate. So the minimum is again, one as you would expect, but what we learn is that the maximum number of counties in which a US bank operates is 870, it's quite large. 870 out of 3000 plus as we have seen.
Then if we look a little bit below, for example, the fourth line. The fourth line is the share of community banks assets, so the market share of community banks in each county. The mean market share is 55.8%, it's quite high. What you can see there is distribution is quite regular, so the 25th percentile is 23.5, the P50, which is the median, is 58.5, et cetera. And of course the maximum as one would also expect is 100% in some counties, there are only community banks. Just below that we have calculated the share of the top five US banks, so the big mega banks. You have them in the footnote, JP Morgan, Bank of America, Wells Fargo, Citigroup, and US Bancorp, so the market share of these five. What is interesting in that line you see the minimum is zero, but also the 25th percentile and the P50 percentile is also zero, so that means that there's a very large number of counties in which those big five are completely absent. So this distribution is very skewed to the right. I did expect that to some extent, but not to this extent, I have to say. That means that there is a large part of the territory of the United States in which those big giant banks don't count at all and we have to look at the much smaller bank population, including in particular, the community banks to understand how the banks affect the economy.

Ignazio Angeloni:

This is an interesting table, but I don't have time to go through it. I want to show now a few descriptive chart. So this is bank intensity. This is the statistic that we just saw, the number of banks per county. We have in each of the charts, and I'm going to show now, on the left-hand side you have a color chart showing the intensity. The color shows, of course, the level of the particular indicator. In this one the darker means that there are more banks in that particular county. On the right hand side we have the histogram, so the distribution, how they are distributed. We compare the distribution in 2019, this is the gray histogram, with the distribution in 2005. So we can have a sense of how the pattern has changed during the course of the last 15, 20 years or so.

Ignazio Angeloni:

First of all you see the distribution has not changed much at all in the last 15, 20 years. You see distribution is more or less the same. It's a crude indicator of the degree of local competition, so the number of banks operating. The other thing that you see in the chart is there is a region in the middle which ranges from the Midwest north to the Midwest south, which is rather white, so that means that in that region there tend to be only very few banks operating. Conversely, on the west and west coast and the east coast, in Florida in particular, as you can see, those are the areas where we have much more "competition", much higher number of banks operating in the same territory. This is the bank intensity measured in a different way, so these are bank assets divided by GDP.

Ignazio Angeloni:

Surprisingly, this tends to be the opposite. So you see the central area is the one in which the ratio between bank assets and GDP is higher perhaps because the GDP is lower, I don't what the reason is there. Just an impression, but it's clear that the central areas on the United States are the ones in which the ratio of bank assets to GDP tend to be higher. And conversely, for example, look at the west coast that's where the ratio tend to be very small. We will see some results on that. On the right-hand side you see the distribution. Distribution has moved to the left between 2005 and 2019, it's moved to the left. So that means that the bank intensity per unit of GDP, so to speak, has gone down in the last 15 years.

Ignazio Angeloni:
This is one of the things we are really interested in. This is the market share of community banks, so the presence of this measures, the presence of community banks in the US territory. Again, we see an area in the middle quite intensive of that color. That color means that community banks in those areas are very important. Conversely, in the west the color is predominantly white and also in certain areas of the east. Not the New England, for example, not certain parts of the south, but the rest of the eastern shore, so to speak, of the US. The presence of community banks is a little bit weaker. It's interesting to look at the picture on the right hand side too. First of all, the presence of community banks is quite stable. You see the chart for 2005 and the one for '19 are rather similar. What has happened is that the spike at the extreme left has gone up. These are counties in which the presence of community bank is zero, so it's absent. That has happened at the expense of counties where previously the market share was in the order of 40%, 50%, 60%, you see the histograms in the middle.

Ignazio Angeloni:
The population of community banks as a whole has gone down, is going down, is trending down in the US and this has happened in particular for those areas where the market share was in the order of 40%, 50%, and with an increase of areas where the community banks are completely absent. Now, there's also a big histogram on the right hand side as you can see, which has not changed much, and that histogram tells us that there are many counties where community banks are the only banks and that reinforces what we saw at the beginning in the statistics. This are the assets of the big five banks as a ratio of total bank assets. It's a little bit the mirror image of the preceding one. They are particularly strong in the west. As you can see the west coast in particular, they are not strong in the center and in the Southeast. They tend to be strong again in certain areas of the Midwest, the New York state, et cetera, and Florida. So this is reinforces the idea that there is a certain complementarity or a substance substitution between the role of community banks and the role of larger banks in different parts of the US territory.

Ignazio Angeloni:
This is the leverage ratio. This is measured in the opposite way that you normally consider. The higher number and the darker color means more capital per unit of assets, not the other way around. Where the color is dark the banks are less leveraged, not more. So you see that in the central part and to some extent also in the southeast part we tend to have darker color, which means more capital, safer banks from the point of view of capitalization, and the opposite happened in the west. If you measure by capital you would say that in the west there are more risky banks, less capital per unit of assets and in the center and the southwest it's a relatively safer. As you can see in the histogram the chart has moved to the right, so the capitalization of banks in general is higher now, this is of course a result of the crisis and the post-crisis reform. In general, the banking sector is more capitalized now than it used to be before the great financial crisis.

Ignazio Angeloni:
Here you have profitability measured by the return on assets. Now, what is interesting here, this is a little bit, again, the mirror image of the proceeding one. At the center you tend to have lots of whites, so low return. We had seen before that the banks were relatively safer, so you have safer banks less risk correspond to less of return as you would expect whereas on the west side, for example, of the country you have higher return on assets and lower capitalization, so more risky banks earn a higher return. This is what theory of common sense economics would suggest. We can see on the right-hand side that the profitability has gone down, or the distribution has moved to the left. This is a result, not only of the fact that banks tend to be safer, but also the lower level of interest rates and lower level of margins which is
a big component of the returns of the bank, the interest rate margins. Actually, we have here the interest margin. It more or less tells the same story as the proceeding chat.

Ignazio Angeloni:
This is the non-performing loans ratio. I find it quite a bit spotty. I mean, there's no story to tell here. There's big differentiation, big differences, lots of whites and lots of dark green, but there's not much of the over pattern, I would say, with the exception perhaps of the west coast where it's a mainly white, so low non-performing loans. The histogram to the right is moved a little bit to the right, so we have more non-performing loans now. I thought that was kind of surprising myself because the 2019 was, as I said, a very good year for the US economy. It was the final year of a very long stretch of good years from the point of view of growth, so I was surprised to see that but still. Maybe it's still a little bit of a legacy of the crisis which remained even after a passage of a number of years.

Ignazio Angeloni:
Now we move to the economic performance and we have lots of indicators. I'm going to show only three. The first is unemployment rate. This tells you the unemployment rate in the different counties of the US economy, sharp differences, as you can see. We find again a big area in the middle of low unemployment, so both in the north part of the Midwest and in the south part of the Midwest, Texas, et cetera. Conversely, the unemployment rate is higher in many areas of the west part of the United States. In the southeast Gulf of Mexico, there are very dark areas there and part of the east, if want to exclude the coast and New England, et cetera. What I found quite interesting and striking about this chart is the visual correspondence that you can see between the unemployment rate and... I'm moving back now. I'm going to the community banks. These are the intensity of community banks and this is the unemployment rate, you see. If one were to sort of do a broad brush judgment based only on these two charts, one would be tempted to say that where the community banks are present the unemployment is lower and this is a little bit.

Ignazio Angeloni:
It echoes some of those arguments that we often hear made and that I think to some extent drive the political agendas that I mentioned before that community banks or small banks in general, this is a story not only for the US, but it's a story which is very popular in Europe as well. Let small local banks protect the economy better than large banks. These two charts, if one were to look only these two charts and nothing else, that will be supportive of that. We will see in a minute, that is not the case. This is the poverty rate. Poverty rate is the percentage of people who are below the poverty as a ratio of total population. This top part is very large, as you can see. So if you see the distribution on the right, the mode is above 10%. Above 10% of the population is below the poverty line, so we are talking about 40 million people or so.

Ignazio Angeloni:
Geographically it's less clear. I mean, you have this a central area but more to the north of white area, so low poverty. It becomes very, very high in the south, southeast and part of the southwest as well. It's a more an issue in northwest or south rather than east versus west here. Similarly, the not-working ratio. Not-working ratio is an indicator that the paper by Austin, Glaeser and Summers, that I mentioned at the beginning, uses quite a bit. This is the ratio of people that don't work either because they are registered unemployed, or because they are not registered unemployed but they stay home. Maybe
discouraged workers or people that simply stay at home and work at home as a ratio of the working age population.

Ignazio Angeloni:
This is considered as an indicator of economic performance by a number of studies and as you can see, the not-working ratio is particularly high. Dark regions in the southwest and also to a large extent in the rich regions of the west, Northern California, the whole west coast is quite dark, to me surprisingly so, but maybe that hides something else, but anyway. This is the not-working ratio, but as I said, if one looks at the charts one is tempted to make big statements about visual correspondence. The whole essence of the study we want to do is go locally and see how the little geographical units drive this relationship.

Ignazio Angeloni:
This is what we do in the panel estimates. Now, let me say that these panels are really preliminary at this stage, so really mickey mouse models for a number of reasons. First of all, as I mentioned, we only have six years. The time they dimension is not only short, but not even continues that jumps in the middle. So we have to put year dummies. We do put a year dummy, which are interesting in themselves, by the way. I mean, some of the year dummies. For example, the 2010 year dummy is very large and very significant post-crisis, so big unemployment, et cetera, the dummy takes that out. We have the year dummies. We consider only three banking variables and three economic variables and this is very simple. The three banking variables are the share of community banks, the return on asset, and the non-performing assets, rather, ratio as a total of assets. The three economic variables are the unemployment rate, the left side column, the poverty rate, the central column and the non-working ratio, the right-hand side column.

Ignazio Angeloni:
We consider the three banking variable first in isolation, one at the time, and then all three together for each of the economic variables. We have no other controls. I mean, economic performance is not driven only by banks and this is pretty obvious, so we should have a good sense of the coefficient, we should have the controls, which I haven’t put them in. This thing is cured to some extent by the fact that we estimate these panels with fixed effects. Fixed effects take away the heterogeneity at the county level because it puts dummies at the county level. So this, in a sense, cures for the fact that there are no explanatory variables that are specific to counties, but not perfectly.

Ignazio Angeloni:
Let's see a little bit the coefficient. I don't know if you can see. I hope you can see my pointer here. Let's look, for example, at the effect of a non-performing assets ratio, the effect on unemployment, or rather, I shouldn't say effect because it's not causal, but the correspondence between non-performing assets ratios and the unemployment. You see the coefficient here is 0.340. The three stars means that it is significant at the 0.1%, so one over a thousand. So this is a very strong significance. We think that given the very preliminary estimates we should consider only very, very strong coefficients. We only look at the three stars in the fourth column in which we include all three variables. This 0.340, if we interpret this coefficient and I'm moving to the next slide. This means that once standard deviation increase in the NPL ratio of banks, let's say moving from the mean, which is 0.7 to 1.3, once standard deviation increase in NPL is associated with an increase in unemployment of 0.2%, which means about 500,000 people, so this half a million people.
Ignazio Angeloni:

Keep in mind that the total unemployment in the US is about 10 million, so this is 5%. This is very large. This is too large in my view because, as I said, I mean, it's not very plausible that only the increase of NPL ratios of banks of one standard deviation, everything else being constant increases unemployment by 500,000. The sign is right. The sign is what we would expect, so healthier banks, stronger banks, or in this case, weaker banks, because when the NPL increases in weaker banks it increases unemployment. All the signs are right in the table but the coefficients are very large and the same is true if we look for example, the non-working ratio effect this coefficient here, we translate it into number of people we get the fact that an increase of the NPL ratio of the same size, so one standard deviation, brings up the number of non-working people by about 420,000. It's a very large number, although the number of non-working people in the US is very large. It's in the order of 35 million, but these are very large numbers.

Ignazio Angeloni:

It's quite natural that this number is large. It's encouraging that the coefficient is what one would expect. But it's quite natural because there is reverse causation, there's obviously reverse causation. I mean, the performance of the economy drives the quality of the banks as well as the quality of the banks drives the performance of the economy. So we have the two effects here and we need to do an exogeneity, endogeneity analysis using instrumental variables and so on in order to disentangle the two. Let's not trust this coefficient, except for the fact that they go exactly in the direction we would expect and that they are very significant.

Ignazio Angeloni:

The other thing I want to show you is the share of community banks. Now, what is interesting here, when the variables are put altogether the share of community banks disappears. It's no longer significant in any of the three specifications. This is a bit surprising. I mean, if one believes the visual messages from the charts that what comes out here is that the presence of community banks does not affect other things being equal, in particular, keeping equal the performance of the bank. Their return on assets and the non-performing et cetera, and all the dummies that are there. Once all these things are taken in the community banks disappear. I think an interesting result that calls for deeper analysis to see. I think this is quite a suggestive that one should not trust quick statement based on simple correspondence.

Ignazio Angeloni:

Let me then at this point conclude. Now, we have lots of data. We believe that these data are very interesting. They are largely unexploited, they are estimated data, they are not pure statistics. They contain an element of estimates, but the story that they tell is very interesting we found, it's very interesting. Although there may be imprecisions inherent in the estimation method that we use, I think that the law of large numbers works for us, that there may be small errors here and there in the results of our estimates, but the general picture that emerges is an interesting one. There's obviously still a lot of work to do because first of all, we have to complete the time dimensions, so lots of work on the data still, then we have to work on the panels much more than we have done so far. I think we can already conclude that there is a clear association at the local level between banking conditions and the economic conditions and it's clear that stronger banks are associated with better economic conditions.

Ignazio Angeloni:
The causality can go both ways, we cannot make any inference on that and so one of the urgent next steps is precisely to look at the exogeneting issues and to introduce instrumental variables in a proper way. We found also interesting and suggested that we found no relationship between local economic conditions and the intensity of presence of community banks. I think I would close at this Scott, and maybe if there are some questions or comments get them.

Scott Leland:
Thank you very much Ignazio, that was a great presentation and a really interesting analysis. I want to remind our attendees to please go ahead and type in their questions using the Q&A feature at the bottom of your screen. We do have a number of questions already. First one up is from [Thomas B 00:46:27], who comments, very interesting analysis. Based on this information to me, it looks like an easy step to take this information down to the zip code level. Would there be any advantages to an analysis at this more dis-aggregate level?

Ignazio Angeloni:
Shall I go ahead and answer each Scott?

Scott Leland:
Yeah. Please go ahead and address that question, or if you'd like to pass we can move on to the next one.

Ignazio Angeloni:
Let me ask first of all, am I going to be able afterwards to see the question which have been asked? Because I would like to have a list.

Scott Leland:
Yes.

Ignazio Angeloni:
Do they remain in the computer, so to speak, so I can look at them later?

Scott Leland:
You'll be able to capture them, or Victoria should be able to [crosstalk 00:47:15]

Ignazio Angeloni:
They maybe important, so I can think about it a little bit more.

Scott Leland:
Yeah.

Ignazio Angeloni:
Right. Yes. The zip code is possible. Using the same methodology is possible for the banks. It would not be possible, as far as I know the real sector statistics, I'm pretty sure that lots of economic and social indicators would not be available at that level. We have to strike a balance between what is available on
the economic side and what we can construct on the banking side. From the banking point of view it's certainly possible, although our assumptions regarding the reliability of deposits as an indicator of location perhaps will be even less valid in that particular case.

Scott Leland:
Great. Thank you. From [Alana Tang 00:48:11], why do you think the data for the big five banks county presence is so skewed?

Ignazio Angeloni:
Well, we know that, right? Even if we don't trust our allocation methodology, so to speak, we know we've seen from the mere presence of... You're asking why it's so skewed? Probably because it's not profitable for those mega banks to operate in certain territories. It's costly to go over there, it's costly to establish their presence. They make much more money doing a merger and acquisitions in New York than doing the small loans in Arkansas. So that's why they stay in the places where they can make the big bucks, that will be my interpretation. The evidence is clear.

Scott Leland:
Thank you from our colleague, Jeff [Frankel 00:49:14]. Better to look at the change in unemployment by county versus community bank intensity. This would capture the notion of community banks insulating regions from disruptions. Prevailing unemployment rate will depend on lots of other factors including demographic composition of county, which varies a lot by county. That's just a comment based on your chart, not on the regressions.

Ignazio Angeloni:
Absolutely true, Jeff. The problem is that the time dimension discontinuous as you saw. We refrain from any dynamics. We left all dynamics out and we put fixed effect, but certainly one of the things that one needs to do going forward building proper panels is to look at dynamics and look at changes. I agree with you, that's one of the next steps.

Scott Leland:
Thank you. We have a question. Could the fixed effects be soaking up the effects of community banks?

Ignazio Angeloni:
It does. It's intended to do that. It nets out the unobserved variation across community banks, which may be caused by other variables. I'm calling on Chantawit now, he may want to intervene because he's the real expert on these estimates. I think that one uses fixed effects precisely to eliminate possible biases coming from the correlation between counties and the aggressors which are present. Chantawit, do want to say something? Sorry.

Chantawit Tantasith:
It is possible but the share of community bank change over time, so it's not totally absorbed by the fixed effect. Yes. I mean, I agree with the question, but from our statistics they share of community bank vary over times, so that fixed effect totally absolve that.

Ignazio Angeloni:
In any case we're going to try the following. We've done also the [inaudible 00:51:52], which is the simplest and we are going to have to test whether fixed effects or random effects once we have a full set of controls and then we have to choose between random effects or fixed effects and that will be, I think, driven by much more rigorous consideration than we have now.

Scott Leland:
Thank you, Ignazio and Chantawit. As you know I will need to drop off a couple of minutes early, so I'm going to pose this last question, but the seminar will continue. There are a number of questions still coming, so depending on how much time Ignazio has available can work through those. And again-

Ignazio Angeloni:
Who's going to call the questions after you leave, Scott?

Scott Leland:
Are you able to see them on the Q&A? If you call it the Q&A at the bottom of your screen, and you can read through them.

Ignazio Angeloni:
The problem is maybe I should take away the slides because with the slides I cannot... No, the Q&A's. I can see. Yes.

Scott Leland:
I'll read this last question and then, unfortunately, I have to drop off, but as I said you can continue.

Ignazio Angeloni:
Okay.

Scott Leland:
Another question from our colleague, Jeff Frankel. Correlations are impressive, obviously you need independent variables or equivalent to get at causality. What instruments do you have in mind?

Ignazio Angeloni:
Instrumental variables. I don't know if Chantawit has already reflected on that. I have not thought about the instruments yet. Chantawit, do you have something to say to that? You are on mute. Sorry, you are on mute.

Chantawit Tantasith:
I think I agree. I think this is going to be the one big step in our future work in order to find the instrument variable. That will help identify more exogenous changes in policy that I think one person has already recommended in the Q&A. Yes, I think this is the one that we will pursue in the future.

Ignazio Angeloni:
Okay. If I read well, the next question is, how does online banking and virtual banking impact or shift these numbers and conclusions? We don't know. It would be interesting to think about your question
when looking at how the distributions evolve over time and how they move also geographically. Let me write down this question as one of the things that we’re going to have to look at as we move to more realistic empirical analysis. Let me move on. Those indicators and more are available at the zip code level. You mean the deposits are available at the zip code level, but not the other balance sheet indicators as far as I’m aware. Let me move on. [Mike Ipson 00:55:07]. Hi, Ignazio, interesting presentation. Have you considered using historical legal constraints on branch banking as an instrumental variable for the share of community banks?

Ignazio Angeloni:
That's part of the next chapter on instruments. I don't know how much variation. I'll have to study that carefully historically, because I don't know how much variation there was in the 2000s. I mean, a lot of those legal changes have taken place earlier, if my recollection is right. That's certainly one of the instruments that one can use going forward. [Ben Freedman 00:55:56], perhaps the reason the community bank share doesn’t matter is the Community Reinvestment Act. The lack of support for local economic development by branches out of state banks, once interstate banking became legal, was what the CRA was meant correct. All right. That's an interesting interpretation. That's a good suggestion. Let me look into that more deeply. Actually studying the different legal steps that have been made in order to check on that.

Ignazio Angeloni:
Based on the analysis what is your opinion on bank consolidation on economic growth? Based on this analysis, no opinion. I mean, there are of course lots of ideas about how consolidation affects banking performance, et cetera, lending performance, and so on, there's a big literature on that. But I would say at the present stage of our research now we cannot draw any conclusion about the consolidation. Let me keep that for future reflection. Thanks for the seminar. Nice presentation, Jeff Frankel. And that’s it. I think I’m done. I’m done with the questions. The only thing I can do is thank everybody for attending. Thanks a lot for all the good questions and comments, which we will consider in detail and have a nice weekend all of you.