BROOKINGS

The Economic Power of Uncertainty: The Role of Consumer Credit Bureaus
Delivered at the Federal Reserve Board's Forum on Credit Scores
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By Matt Fellowes

[SLIDE 1]

In the invitation to speak today, the Federal Reserve asked us to focus on what research can tell us about credit scores and reports. And, because these are forecasting tools, I'm going to forecast right now that I think this day will actually be much more about what the research doesn't tell us, than it is about what we do know. It is shocking how studded the extant work is with uncertainty and hedging phrases like "possibly," "assuming," "hypothetical," "tentative." You can't help but get the impression that what we don't know is as important, maybe even more important, than what we do know.

With that as context, I want to focus my comments today on two points related to the major economic consequences of the relationship between credit scores and uncertainty.

The first point I want to make is that credit scores and reports have substantially reduced uncertainty that numerous types of businesses have about consumers, which has resulted in economic growth and prosperity. That is particularly clear in credit markets. Prior to these products, borrowers and lenders in our economy were essentially standing around in a dark room, only able to interact with and be knowledgeable about people that they were located near to.

Credit reports and scores were part of a number of innovations that turned the light on in that room, so that suddenly lenders could see many more borrowers, which substantially reduced the uncertainty they had about the likelihood they would be able to make future payments on loans.

The chief economic impact of that reduced uncertainty has been to *support* economic growth and the historic democratization of credit that occurred in the 20th century, particularly in the last couple of decades. That happened because once lenders could see more borrowers they saw millions of Americans that looked liked profitable customers for credit and loan products. That led to more businesses and consumers having access to more money, which meant more spending, more investing, more jobs…more economic growth.

The second point that I want to make is that alongside those reductions in uncertainty in the market, there were new uncertainties created too, which also carry economic consequences.

One broad class of these uncertainties that I want to talk about this morning are related to the error in credit score predictions. Using past behavior to make predictions about future behavior is very informative, but not perfect. As one of Bob's colleagues memorably said at a past Federal Reserve conference, it is difficult to drive a car by looking out the rearview window, which is essentially what credit scores are trying to do in the market. I want to focus, in particular, on some of the business implications of this difficulty.

The second type of uncertainty I want to raise this morning for discussion relates to the errors consumers make about credit. As I said, when credit scores flipped the light on in credit markets and allowed lenders to see more borrowers, that help propel a dramatic democratization of credit. But, as it turns out, the eyesight of both borrowers and lenders was not as good as many assumed it would be, carrying economic consequences that are not very well understood.

And, until that happens, the main economic result of these uncertainties is that I think we are not even close to realizing the potential that credit scores and reports more generally have to drive economic growth and prosperity.

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Okay, so let's start with the economic importance of the reduction in uncertainty that credit scores and reports helped bring about.

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We know from both theoretical and historical work by economists, that the great contribution of credit reporting agencies and the scores that are derived from that data is to reduce the information asymmetry between principals and agents.[1]

The bureaus reduce this uncertainty because their product is information about the past behavior of over 200 million Americans, and hundreds of millions of other people around the world. On most of these people, the bureaus now have more than 300 different variables, only 8 or 12 of which might go into a scorecard. That adds up to billions of bits of data that now affect billions of different business decisions. According to FICO, their data now influence over 180 billion decisions every year.

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In credit markets, this reduction in uncertainty means that lenders know more today than they once did about the ability of borrowers to repay lenders.

In insurance markets, it means that insurance companies know more today than they once did about the probability that drivers will file insurance claims.

In employment markets, it *may mean* that employers know more today than they once did about the probability that employees will show up to work on time.

In rental markets, it *may mean* that landlords know more today than they once did about the probability that rental applicants will make payments on time.

And so on.
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What have been the economic effects of this reduction in uncertainty?

Our knowledge of that impact is incomplete. We don't have rigorous information about the economic impact of scores on insurance markets, employment markets, rental markets, and other applications.

We do have some evidence, though, that speaks to the impact of these products on credit markets.

[1] Principals are lenders – who should they invest in – agents are borrowers.

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By providing lenders with ready access to financial information about over 200 million Americans and, even more important, the capacity to convert that information into a single number that rank-orders consumers by their risk level, this helped lenders loan to more people than they once were able to.

Unfortunately, it is impossible to rigorously disentangle the effects of these billions of bits of data from the other market developments that have also promoted the supply and demand of credit.

Technological changes, like those that dramatically increased our ability to store, transmit, and analyze data, helped propel credit market growth.

Public policy, like interest rate deregulation, the Gramm-Leach Bliley Act, and the Community Reinvestment Act, and so on helped propel credit market growth.

And other developments, including urban sprawl and mortgage contract changes, helped propel credit market growth.

All of these developments also likely contributed to greater lending and borrowing.

Nonetheless, it is difficult to see how the more than 2 million credit reports that are sold every day do not play a major role in promoting economic growth and prosperity. Collectively, these data and predictions reduced an incredible amount of uncertainty in markets.

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Probably the most rigorous assessments of this effect has been the work that's looked at international data because over 17 countries have created credit bureaus since 1989, which means we can look at the before and after effects.[2]

In contrast, reports and scores came online much more episodically in the U.S. market, over a very long period of time, making it difficult to see their independent effects. In fact, U.S. credit registries started developing in the mid-19th century when Don and Bradsheet, then two different companies, started collecting and selling these data. Credit scores eventually grew out of similar data collected on the consumer side; the now omnipresent FICO score, for instance, was first unveiled in 1958.

Nearly all of this literature that has looked at the impact in these 17 countries of using credit bureau data has found that after the adoption of information sharing, there was an increase in loan consumption, that remained even after other market developments were controlled for. Work by economists at the Central Bank of Chile, found, for instance, that loan consumption would have been 40 percent lower without the introduction of a credit bureau in 1989.

That increased borrowing is then part of a cyclical relationship with GDP, because more loans mean more consumption, which means more jobs, more income, more demand for loans, and so on.

Now, as I said, we can't come to this same type of hard estimate in the United States because of the difficulty establishing a counterfactual. And techniques that strive to estimate the counterfactual are fraught with error.

[2] Including countries like Brazil, Ecuador, Costa Rica, Dominican Republic, etc.

But, if you're comfortable, as I am, in assuming that 300 variables about more than 200 million Americans might have helped played an extremely important role in driving lending and borrowing, than we can look at some effects here in the U.S.

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For instance, at the very same time that credit scores were being used in automated origination processes in the mortgage market, we also saw that low-income households were the fastest growing share of the mortgage market. Between 1989 and 2004, for instance, the proportion of low-income families managing mortgage debt increased by over 80 percent, compared to just a 6 percent increase in high-income families. Similarly, credit card borrowing increased by 73 percent, compared to basically no change in the top quartile.

These consumption rates are still much lower than higher income households, but nonetheless, these data point to more Americans consuming more debt than they once did.

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The second piece of data I want to show you that speaks to this trend are aggregated credit report data from TransUnion, which are available in a dataset they sell call TrenData.

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The first slide illustrates the demand for credit in every county in the country between 1993 and 2007—the black line on top is the 1st quarter of 2007; the red line on bottom is the 1st quarter in 1993. It's an appealing way to look at this expansion in credit that scores and reports helped drive because the racial, ethnic, employment, income, credit quality, business activity, and other characteristics of the county are so variable, meaning that we're controlling for many of these differences in this slide.

What it shows is that the number of trades in each county for every consumer living in that county dramatically increased across the board between 1993 and 2007. What is also shows a relative level of parity in borrowing and lending propensity across places.

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We also look at this trend for mortgages, since there was less of an aggregate increase in the number of mortgages held per borrower over this period, although piggy-back loans and other second-mortgage products, as well as the recent speculative buying we've seen, has caused some increase.

Here we show the same time trends. Mortgage borrowing increased across the board during these 14 years.

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And the same is true for revolving trades. As we move from 1993 to 2007, there was more borrowing per consumer in every county in the country.

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So, together, these data indicate that credit scores and reports have produce a substantial amount of information about consumers, reducing the uncertainty various businesses have about consumers. In credit markets, that has helped increase loan consumption, which then sets off a cyclical effect with economic growth. This has resulted in a democratization of credit.

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Okay, so those are the primary ways that scores and reports have reduced uncertainties in the market, and the primary benefits from the economic results that followed. As I said in the introduction, alongside those reductions in uncertainty, there were new uncertainties created too, which also carry economic consequences.

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The first type of uncertainty is caused by error in credit score predictions.

While these scores have been shown by research to reduce error in underwriting compared to manual underwriting, and have been shown in the Federal Reserve's studies and numerous others to effectively rank risk, they are not perfect predictions of future behavior, which is impossible.

In fact, the scores that we have data for indicate that a large amount of error occurs because the scores are biased to be overly conservative, which is good. We wouldn't want it to be the other way around. But it does show there is plenty of room for improvement in this product.

Now, the point of drawing out this piece of evidence is to point to the need to continue to improve these products so that they can contribute even more to growth and prosperity. These products are not error-free and that has consequences that should be taken seriously.

To illustrate this I want to look at several pieces of data that illustrate the error in predictions about future behavior.

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First, this slide shows the predicted mortgage delinquency rates at different FICO scores, which comes from a FICO paper a few years ago. Now, every lender has their own odds-ratio cut-off points for assigning rates at different risk categories, but in general, we know that 620 on the FICO score is the cutoff for prime loans, although for some lenders it went up to 660 or 680. And new Fannie guidelines specify that households between 620 and 680 will have more paperwork requirements, causing some lenders to start calling this group mediocre prime, as opposed to near-prime.

What we see is that scores very accurately sort risk and rank it. At low scores, delinquencies are much more likely to occur than at high levels. This indicates a high level of accuracy related to the ability of these scores to properly distribute risk.

Nonetheless, it's impossible to make a perfect prediction about someone's future propensity to fall behind on their payments based on their past behavior.

Because of that, these data also indicate that the majority of the sub-prime borrowers are predicted to not become delinquent.

In other words, high-risk borrowers got access to this mortgage credit because, in part, of scores and reports. But they will be paying a very high price for that access. To show that, I've put current average rates assigned to different FICO scores on this chart. So, millions of people are paying a higher price than they might otherwise qualify for if there was perfect future information about them available.

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That trend is also illustrated if we look at the more serious case of borrowers defaulting, not just falling behind on payments. To show this, I want to look at data from a recent briefing by Fitch Ratings in New York City. Here, they show the predicted foreclosure rate at different risk levels, with the predictions on the y-axis and the risk levels on the x-axis. And, here again, this shows that most people that are characterized as a high risk of default will in fact not default on their loans.

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Finally, these are data from a report on the Massachusetts subprime market just out this week from Bob and Eric's colleagues up at the Boston Fed, which shows that of the universe of subprime mortgages originated between 1989 and 2007, only a small share have actually gone into foreclosure. They forecast that this rate will increase to 18 percent if housing prices don't recover soon. But even the worst case scenario suggests that 82 percent of subprime borrowers will not default.

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There are a number of important economic consequences that follow from this error.

First, this error has helped make the subprime market extremely attractive in recent years. Now, we don't have good data on most of the high-risk credit or loan markets—like auto loan, credit card, or others.

But we do have data on the high-risk mortgage market. From the perspective of an underwriter, seeing a worst case scenario that predicts 5-10 percent of a high-risk portfolio will go bad, with 90-95 percent of that portfolio paying 2-3 percentage points above the low-risk portfolio looks extremely good on paper. Even better, the secondary market was hungry to blend in these high-yield loans with lower yields, so lenders had even more of an incentive to sell these loans, package up that risk and then sell it to investors.

You can see just how attractive these yields were by looking at HMDA data from the past few years, which show the growth in high-cost mortgages in recent years. It shows very clearly that high-cost loans became a larger and larger share of the mortgage market in recent years.

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In 2004, high cost mortgages made up more than 22 percent of the mortgage market in 5 states.

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In 2005, that number had grown to 36 states.

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And, by last year, it had captured more than a fifth of the mortgage market in 46 states. This was where the mortgage market had placed its bets on future growth in the market, which we know now not to have been the right bet.

But this trend in recent years created new demand in the housing market, putting pressure on the supply. Over a short amount of time, the Federal Funds Account data indicate that this created trillions of dollars in equity, some of which was pulled out by homeowners and spent in the economy, creating further economic growth.

So, one major economic consequence of this error is that it helped created a market in the mortgage market for higher-yield investments with higher risks too, which promoted lending and borrowing, contributing to economic growth. So, in the short-run anyways, the error in these predictions are maybe as important as their accuracy.

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The second major economic consequence of that error is that at the very same time it helped propel lending and economic growth, that error also acted as a curb against growth in the credit markets because many people were and are denied credit who could actually qualify for credit.

This point is probably most clearly reflected in the work of organizations like the Information Policy Institute and the Center for Financial Services Innovation which, although working with small samples, show that many people that are rejected for credit actually would have qualifying scores if alternative information—like utility payments—were factored into the equation.

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This figure illustrates this conclusion. What these findings suggest is that there is more access error on the bottom end of the distribution of scores, as well as in the segment of the population without enough information for a score to be generated. In fact, with the inclusion of additional information scores may be generated, and the net effect seems positive.

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The bottom line: Credit scores very accurately sort future risk, but they are not oracles.

Now, as I've said, this error is still dramatically less than past error. The market appetite for making that error has also meant that millions of people have gotten into homes and been able to be consumers of other types of credit. And, until recently, that's been a huge boon for our economy.

But, it's also meant for these consumers that the majority are likely to overpay for this asset choice. And, for millions of other consumers, it's meant that they've not had access to credit that they might otherwise qualify for.

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The second type of uncertainty I want to address this morning is the uncertainty that consumers have about selecting credit that is in their best interest—a decision that credit scores have helped make possible.

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I've already argued and shown data that indicate theses billions of bits of information now readily available about approximately 200 million adult consumers in this country have helped promote access to credit by giving lenders a great deal of useful information. This helped create millions of new consumers of credit in this country.

What scores and reports also helped motivate is market segmentation, and the development of specific products for those customer segments. At the most general level, we have subprime and prime mortgages for different risk categories, as well as dozens of other differences.

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One of the major market consequences of this financial services innovation is that there is now a great deal of complexity in markets. Consumers have many more choices than they once did.

This has helped consumers find products that match their interests, but it also may have helped make consumers less certain about which credit is in their best financial interest.

And that's pretty ironic because where credit scores great attribute was to reduce uncertainty for lenders caused by too little information about risk; it turns out that in doing that, these products may have also helped foster a new uncertainty for borrowers caused by too much information about risk. So, the relationship between information and uncertainty has been reversed.

In this case, too much information now may be as serious a problem as too little information—a point that I don't think is properly understood or embraced in federal policy.

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I want to illustrate two ways that this is so.

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The first is mortgage data from Loan Performance, which looks at the proportion of borrowers that bought subprime mortgages between 2000 and 2007, ranked by their credit scores. Borrowers below 620 should be considered subprime, borrowers between 620 or 680 could be considered potentially prime, and borrowers above 680 should be considered prime. Every lender has their own odds-ratio assigned to different scores, but this is reported to be the general break points.

The data show clearly that over time a growing share of borrowers that bought subprime mortgages had credit scores at the time of origination that may have qualified them for prime mortgages, an insight I should point out was made by Peter Zorn and his colleagues at Freddie Mac several years ago.

This provides at least suggestive evidence that broad shares of subprime borrowers—many of whom may not have gained access to credit without the use of scores—were uncertain about the best rate that they qualified for at the time of origination.

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The second example I want to point to is not in choices between contracts, but instead about the decision about whether to sign a contract at all. We could talk about a lot of different types of contracts here, from credit cards to student loans, but let's talk about mortgages since they're getting so much attention right now.

The literature is full of claims that credit scores helped give access to homes to people that might otherwise not have qualified for homes. And I have pointed to caveats that need to be tied to those claims but as I said, I'm generally comfortable with accepting that conjecture. I think it's unreasonable on its face to suggest that 300 variables on 200 million consumers does not carry substantial economic power.

What that power in the marketplace also did, however, was put a premium on people being able to determine whether mortgages are in their best financial interest. And there is a growing amount of data pointing to the fact that many consumers may not be up for doing that complicated math.

Several pieces of data provide suggestive evidence—none of it conclusive.

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First, we know that the foreclosure rate has recently shot upward, despite solid economic growth, rising income, and low unemployment levels. These data are the historic Mortgage Bankers Association mortgage delinquency time series, which show that between 1979 and the 3rd quarter of this year, there was a steady increase in the share of all mortgages entering foreclosures. But starting in 2006, there was a spike in the foreclosure rate. This is shown by the red line.

I show in the blue line the unemployment rate during this same period, and it suggests that foreclosures have been spiking at the very same time unemployment has been relatively low. I could have also plotted a number of other economic indicators and the trend would be very similar.

This recent trend calls into question the ability of an admittedly small number of individuals to determine whether it was in their best interest to buy a home.

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The second piece of evidence, which is more comprehensive and troubling, is that we know that even while the U.S. Flow of Funds Accounts indicate that aggregate homeownership equity increased in value in recent decades, the proportion of families with low or negative equity has also been steadily increasing in recent years.

These data also come from Loan Performance and are based on about 26 million mortgage originations between 1985 and 2005. The dark blue line on the bottom here is the cumulative distribution of home equity of loans active in 2005 that were first originated in 1985. The light blue line on top is the distribution of loans originated in 2005. Unfortunately, I haven't been able to obtain more recent information.

As you would expect, younger mortgages are associated with more equity.

But there are two startling trends in this figure. The first is that this figure shows that in 2005 about 10 percent of homeowners had negative equity, including, surprisingly, some homeowners with 20-year-old first mortgages, and about 17 percent of outstanding mortgages had less than 5 percent equity. That is a huge amount of leverage households were trying to balance.

More startling, these data show that about 40 percent of the loans originated in 2005 had less than 5 percent equity in 2006, and 20 percent actually had negative equity.

For our purposes, the significance of these data is that they indicate that millions of homeowners bought or own homes with a huge amount of leverage, no cushion against a price recession, and with unsettling odds that they would sell their home at a loss. The median duration in a home is only 6 years, which gives these households a tight window to build enough equity to cover the transaction costs.

We also know from plenty of work that homeowners tend to be very poorly diversified, which is even more problematic as the risk of homeownership increased. Together, this evidence also suggests, although it certainly does not prove, that families have had trouble evaluating whether homes are in their best financial interest.

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Finally, and most clearly, there is a small, but growing literature that is beginning to question the size and location of the population that actually are better off financially from owning a home, as opposed to some sort of market investment.

One of the better studies I've seen on this subject is in a book that Bob contributed to recently, which includes an analysis that looked at the comparative returns for homeowners and renters in nine Canadian cities between 1979 and 2006. They found that if renters invested 100 percent of their savings into a diversified portfolio—some sort of ETF vehicle—they would have been better off in most cities.

There are some limitations on the comparability of that data with the U.S. market. This study, and all of the U.S. counterpart studies I've seen, also have serious data limitations.

Nonetheless, it is an informative look at an assumption that few people have rigorously assessed in the U.S. market. And it suggests that access to homes is not enough to claim success; instead, we must look for access that yields financial returns, too.

The bottom line: Credit scores and scores have helped expand access to credit and opportunity, but it's becoming increasingly unclear how many consumers can really effectively use those opportunities.

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In conclusion, credit scores and reports have reduced a substantial amount of uncertainty about consumers, by creating so many bits of data on each of us and converting it into a 3-digit prediction about our future behavior. That, along with other market innovations, has helped promote access to a great deal of opportunities.

At the same time, though, the potential to fully realize those opportunities is curbed, in my mind, by an insufficient amount of attention to the uncertainties that have also been nurtured by these products.

Of these, the most important in my mind is the fact there is a growing amount of evidence calling into question the ability of consumers to use these opportunities to their advantage.

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Responding to this evidence has to go far beyond financial education. Using financial services effectively today isn't like driving a car, where a bit of knowledge about the rules of the road can get you on your way. Effectively using financial services in today's retail financial services environment is more like being able to fly a plane, where there is a high level of expertise now needed to effectively use these opportunities to get ahead and where that expertise is continually challenged by shifting currents and conditions. It is not realistic that everyone can obtain this level of expertise, so we should stop aspiring for that goal. Instead, we must face up to the reality that the complexity of today's retail financial services market mandates that we focus on broadening access to professional, responsible financial advisors. Only full-time, trained, financial services experts have enough knowledge and access to enough resources to regularly make informed, strategic decisions between the many options most households now have regarding their finances. Connecting more people to these resources is the only realistic way, in my mind, that we will be able to more fully harness the potential credit scores and reports have to drive prosperity.

Thanks.