Facebook and Finances

How Mobile and Social Media Meta Data is Being Used to Approximate Credit Scores

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Introduction

Picture yourself ready to close on a brand new home for you and your family. The paper work is all in place and your deposit has been taken. The whole transaction hinges on you securing financing from your bank. To your surprise you are denied. You lose your deposit and your dream home is snapped up by another bidder. As you drown your sorrows online, think before you post. Your loss might not have been caused by payments you missed, but by connections you made on social media.

The Facebook Situation

The twitter, blogo, and all other related "spheres" have been ablaze recently with the revelation that Facebook has acquired a patent for a method of synthesizing a credit score based on users' social media activity. Insert your own reference to dystopian fiction here and the articles practically write themselves. We must now all collectively opine on the terrors of the digital age, the erosion of privacy, and the end of human decency in our time. Hopefully we will try to be a bit more open here and examine both sides of the issue-- but we aren't handing in our tinfoil hats just this yet.

In a Venturebeat article on August 4th 2015 titled "Facebook Patents Technology to Help Lenders Discriminate Against Borrowers Based on Social Connections" by Mark Sullivan, the author called out the strange patent and its negative implication.[1] Sullivan pointed out that this seemingly innocuous patent that includes methods of preventing spam also included a curious section near the end:

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[1] http://venturebeat.com/2015/08/04/facebook-patents-technology-to-help-lenders-discriminate-against-borrowers-based-on-social-connections/

"In a fourth embodiment of the invention, the service provider is a lender. When an individual applies for a loan, the lender examines the credit ratings of members of the individual's social network who are connected to the individual through authorized nodes. If the average credit rating of these members is at least a minimum credit score, the lender continues to process the loan application. Otherwise, the loan application is rejected." (The patent can be found here[2]) (update, patent text mysteriously missing but info is still available here[3]).

This largely resparked the online debate into this area and by August 27 The Nation had released a piece called "How Companies Turn Your Facebook Activity Into a Credit Score" by Astra Taylor and Jathan Sadowski[4]. This piece went into depth on the potential issues with system and its ability to perpetuate bias reinforcing race and class lines and creating greater financial segregation.

VentureBeat's Sullivan cuts to the core of the issue: just because some of my friends have bad credit scores doesn't mean I do.

Nor should you.

Or perhaps even if it did mean you were a statistical risk, is the whole system simply unfair?

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[2] patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&u=/netahtml/PTO/search-adv.htm&r=4&p=1&f=G&l=50&d=PTXT&S1=(("facebook".ASNM.)+AND+@PD>=20150804<=20151231)&OS=AN/"facebook"+AND+ISD/8/4/2015->12/31/2015&RS=(AN/"facebook"+AND+ISD/20150804->20151231)

[3] http://stks.freshpatents.com/Facebook-Inc-nm1.php

[4] http://www.thenation.com/article/how-companies-turn-your-facebook-activity-credit-score/

These aren't questions we can answer here, nor will we analyse if this should be, or is legal. The Fair Credit Reporting Act and Equal Credit Opportunity Act were the pre-digital answer to a discriminatory lending environment. The FCRA regulated the use of individual credit reports and the ECOA prohibited discrimination against credit borrowers based on race, religion, color, national origin, sex, age, or marital status. These laws both blocked outright discrimination and created a system where if consumers were denied a loan based on their credit report they would be informed[5].

While these laws weren't perfect and never achieved true fair lending across the board, it is difficult to see how they could even hope to be able to combat a deluge of non-official credit scores based on big data that may not violate the letter of the law. Many new lenders may not qualify under the old laws lenders, as may the data likely not be considered a credit score.

The jury is still out on the issue of non-credit scores and big data being used to make lending decisions, however even among the staunchest fintec advocates who want social data to be made into synthetic credit scores, many are appalled by the simplicity and potentially misleading and discriminatory nature of the process described in the facebook patent language. "If the average credit rating of these members is at least a minimum credit score, the lender continues to process the loan application. Otherwise, the loan application is rejected."

This brings to mind the age old question: do birds of a feather flock together? Am I really the average of my five closest friends? What about 4k facebook friends, or 400K twitter followers? Even if so, that seems more like folksy wisdom (or as we like to call them, "heuristics") than a legitimate big data solution to something as important as credit decisions. As for Facebook's plan to average your friends to judge you, even the 1.5 children we each have as Americans know that averages can be misleading.

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[5] http://www.fullertonlaw.com/newsletters/a-legal-perspective-of-the-fair-credit-reporting-act-and-equal-credit-opportunity-act.html

Your Phone May Already be Judging You

In day to day life, the people you meet might judge you based on how new and expensive your cell phone is, but a new trend around the world is that your cell phone itself may in fact be judging you. Mobile phone usage and payment data can be used in some instances as a proxy for credit scores.

While in the US, an entrenched polyopoly of credit scoring companies (Equifax, TransUnion, and Experian, and to a lesser extent Fair Isaac-- the creators of the FICO score) have integrated reliance on their scoring system into most lending institutions, globally there is no standard credit score system. Many countries rely on other companies to provide such data, or worse, forego formal credit scoring all together creating costly barriers to lending.

Compare the time and cost of a loan taken in a country with an objective credit score and a firm mandated minimum score, versus a complex calculation and evaluation done by each banker on each applicant with no clear objective standard in a country that has no credit score system.

In some places, what may be seen as intrusive data practices in the US, are actually a vital lifeline-- a step toward banking the unbanked and providing a way for people to improve their circumstances.

These firms believe they can use the data generated by mobile phone usage and other payment history and behavior to approximate a risk score similar to a credit score for regions without formal credit scoring[6].

Many companies are getting into this space and using all kinds of factors to determine potential credit worthiness. Data includes many factors with no standardization across platforms. Some of the data points we have seen listed includes:

- Time of day / night and duration of phone calls
- Time of day / night visiting a lender's website
- Payment history of cell phone bills, utility bills
- Purchases of prepaid minutes
- Location data
- Social media contacts and presence

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[6] http://www.cignifi.com/en-us/

- Behavioral analytics (mouse and scrolling movement, duration on a webpage etc.)
- People's e-commerce shopping behavior and device data (apps installed, operating systems)
- The 10 lesser known credit bureaus used by payday lenders, defaults, bankruptcies, late payments, use of mobile payment systems
- MANY additional data points.

How many more? One service we checked indicated use of 70,000 data points, one indicated use of 80,000 data points. Whether or not these complex formulas are the holy grail of lending they claim to be, they are likely better than basing the entire score on a simple average.

Well Funded Cignifi Tested this Technology in Brazil

Cignifi recently partnered with Oi Telecom and the Inter-American Development Bank to demonstrate Cignifi's credit scoring technology in Brazil. Key results included:

- *Cignifi Risk Score* is a significant discriminator of default risk.
- *Cignifi Response Score* is a significant indicator of customer take-up.
- Substantial profit opportunity for lenders from a combination of lower defaults and reduced acquisition costs.
- Mobile customers who adopt credit products become more loyal and valuable to the mobile network[7].

Cignifi has developed sophisticated modeling software that can look at usage data from consumers' mobile phones and make predictions about who that person is and how they live. There's no single data point — like making lots of short calls between 2 and 5 a.m. every morning — that suggests that someone is a bad

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[7] http://www.cignifi.com/en-us/technology/case-study

credit risk. Jonathan Hakim, Cignifi CEO said, "The way you use your phone is a proxy for your lifestyle. It's not random. So we're looking at things like the length of calls, the time of day, and the location you make them from. Also things like whether you top up [a pre-paid SIM card] regularly. We want to see how stable the patterns are. When you look at that, you can create these behavioral clusters that give you information about users' appetite for new [financial] products, and their ability to repay a debt[8]."

In 2011, Cignifi raised about $600,000 from individual investors including Larry Rosenberger, the former chief executive of Fair Isaac, the company that developed the FICO score. The startup received a $125,000 grant from the World Bank.(2012)[9].

In two rounds of funding, they have received $12.1 Million in venture capital from American Express Ventures and Omidyar Network (Ebay founder)[10].

Out of Africa

In Fintech, many people see Kenya as a sterling example for innovation. Their population has largely leap-frogged many traditional payment systems and many people use M-pesa for their day to day transactions. M-pesa is a mobile currency and payment system managed by Safaricom, Kenya's main mobile service. With the success of M-pesa growing a

huge user base, Safaricom decided to integrate their own lending platform, M-Shwari. In 2012 Safaricom had already disclosed that they would use payment history along with phone usage data in order to make their lending decisions.

Safaricom is relying on the spending patterns of its customers, traceable from their airtime top-ups and M-Pesa transactions to determine the

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[8] http://www.boston.com/business/technology/innoeco/2012/01/what_does_your_mobile_phone_us.html

[9] http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/FPD/2012/01/10/6ECB75CFB590084A8525798100510A94/1_0/Rendered/INDEX/Cignifi0Inc00G00TF0110540CONFORMED.txt

[10] https://www.crunchbase.com/organization/cignifi

creditworthiness of subscribers.

Credit evaluation experts see this as giving the telecoms firm an edge over banks, especially with regard to target market that is mainly made up of informal sector operators who have been unable to secure loans for lack of cashflow statements, payslips and collateral. Accounts can be opened with a few easy clicks on their phone without filling out an application[11].

Their webpage states that "In order to qualify for a loan you will have to be an active M-PESA user for at least 6 months, save regularly on M-Shwari account and continuously use other Safaricom services such as Voice, DATA and M-PESA[12]."

A Whole New Trade in Trust Is Coming

Facebook, Safaricom, and Cignifi are not the only players in this space. Some, like the Hong Kong-based Lenddo, which currently operates in the Philippines and Colombia, scrutinize the applicant's connections on Facebook and Twitter. Lenddo uses a surprising social reinforcement mechanism. You select friends to vouch for you, and they are notified when you repay your loan to Lenddo. Here is the hair raising part for privacy advocates-- In the past Lenddo would threaten to notify your contacts that you haven't been paying[13]!

Lendup, a fintech online lender in the US does a little facebook stalking in their due diligence process. They look at social media activity to ensure that factual data provided on the online application matches what can be inferred from Facebook and Twitter.

Wonga, a UK online lender considers the time of the day and the way a candidate clicks around the site in determining whether to

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[11] http://www.businessdailyafrica.com/Safaricom-takes-on-banks-with-micro-loans-product-/-/539552/1629894/-/item/0/-/kkxxo2z/-/index.html

[12] http://www.safaricom.co.ke/personal/m-pesa/m-pesa-services/m-shwari

[13] http://observer.com/2011/12/as-banks-start-nosing-around-facebook-and-twitter-the-wrong-friends-might-just-sink-your-credit/2/

grant a loan[14].

Another potential player in this space is Zest Financial. Founded by Former Google CIO, Douglas Merrill, Zest Financial applies a big data to payday lending. Usually the purview of tellers in a stripmall storefront, at Zest, the payday lending decisions are made by a new underwriting model named Hilbert. Hilbert takes 70,000 signals, runs them through 10 separate underwriting models, each able to consume hundreds of thousands of variables. "The 10 models vote in a way, it's like getting your 10 smartest friends around a table and asking their opinion about something," Merrill says. Results are produced in 250 milliseconds to deliver results. "We're about 50% better than our previous model on approval rate and default. And [the previous model] Hollerith was 50% better than industry average." (The models are evaluated by looking back at loan scores and noting which went bad and which didn't.) Its new model weaves more human understanding into the mathematical calculations. For instance, there are good bankruptcies and bad bankruptcies, Merrill says. "You have to understand the implications of bankruptcy on the underbanked," he says. "Sometimes it doesn't matter, sometimes it does matter[15]."

The American Banker article highlights that Zest is only one among a new host of companies using information from third parties like utilities and telecom operators, who provide information about how well people pay their bills. Some have suggested that this may provide better information than a credit report since sometimes your missed payment history may not be reflected if it doesn't progress to collections. Others suggest that this kind of data provides uneven footing to borrowers and doesn't reward and punish as uniformly and fairly as credit reports.

[14] http://www.slate.com/articles/technology/future_tense/2013/01/wonga_lenddo_lendup_big_data_and_social_networking_banking.html

[15] http://www.americanbanker.com/issues/177_223/zestfinance-aims-to-fix-underwriting-for-the-underbanked-1054464-1.html?zkPrintable=true

Conclusion

Obviously this genie is out of the bottle, and with the ability to collect an unlimited amount of data on individuals, that data will come back to benefit, burden, or bite the originator. We have seen that this type of data can make a positive impact in places without credit scores to help the unbanked, and it may even be able to provide better outcomes than credit scores by some peoples' evaluations.

Disregarding the problems with the current system of credit scores, they had legitimate uses within a well defined legal framework. Their uses were regulated to prevent discrimination and people were informed when their credit scores were accessed. These scores reflected a person's actions; their missed payments, their repaid loans, and how many credit cards they used. In the world we are quickly finding ourselves in, it is not only our actions, but our associations and the collective actions of our network that will judge us. Guilt by association-- this is the philosophical issue with which we must grapple. What meaning can be derived from your social connections? Do birds of a feather really flock together? What of the potential chilling effect this sort of pressure might have on our supposedly classless society?

A major issue is likely to arise in that some groups already have long standing institutional and systemic income and savings inequality. In a world where Ruritanians are an oppressed minority, a person of Ruritanian birth is likely to know more poor Ruritanians than the average person, and if scrutinized based on an average of their contacts would thereby be saddled with the same kind of prejudice based financial burdens we attempted to wipe out in the reforms that attacked redlining and racially motivated lending practices, even if the computers never considered race as a factor.

While these data driven ways to score borrowers have a great deal of potential, we must remain vigilant, scrutinize the processes for logic and fairness, and resist the urge to blindly follow algorithms into the mistakes of the past. For data cannot always judge character. Recall what

happened in the Ireland Banking crisis of the late 70's when the bankers went on strike and warned the public that the economy would collapse without a banking system. What happened instead was a peer-to-peer banking system where the local pubs became the de facto banks, lending money to their customers. It worked so well that some people even joked that there is no better judge of character than a bartender. Big data didn't exist then.