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Fintech and Non-Traditional Underwriting Data: FDIC Issues Research Paper on Credit Scoring Using Digital Footprints

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The Federal Deposit Insurance Corporation's Center for Financial Research recently issued a [research paper](#) that looks into whether the digital footprint – information that people leave online simply by accessing or registering on a website – helps augment information traditionally considered to be important for default prediction and whether it can be used for the prediction of consumer payment behavior and defaults. The researchers analyze the information content of the digital footprint for predicting consumer creditworthiness and default. By incorporating more than 250,000 observations, the researchers found that even simple, easily accessible variables from the digital footprint equal or exceed the information content of credit bureau scores. Furthermore, the researchers found that the discriminatory power for unscorable customers is very similar to that of scorable customers. According to the researchers, their results “have potentially wide implications for financial intermediaries’ business models, for access to credit for the unbanked, and for the behavior of consumers, firms, and regulators in the digital sphere.”

As the researchers note, “understanding the importance of digital footprints for consumer lending is of significant importance.” If digital footprints yield significant information on predicting creditworthiness, “then fintechs – with their superior ability to access and process digital footprints – can threaten the information advantage of financial intermediaries and thereby challenge financial intermediaries’ business models.”

The researchers’ data set, in addition to containing a credit score from a private credit bureau, also includes a set of ten digital footprint variables:

- the device type (for example, tablet or mobile);
- the operating system (for example, iOS or Android);
- the channel through which a customer comes to the website (for example, search engine or price comparison site);
- a do not track dummy equal to one if a customer uses settings that do not allow tracking device, operating system and channel information, the time of day of the purchase (for example, morning, afternoon, evening, or night);
- the email service provider (for example, Gmail or Yahoo);

- two pieces of information about the email address chosen by the user (includes first and/or last name and includes a number);
- a lower case dummy if a user consistently uses lower case when writing; and
- a dummy for a typing error when entering the email address.

The combination of these variables and the credit score allowed the researchers to assess the discriminatory ability of the digital footprint variables both separately, vis-à-vis the credit bureau score, and jointly with the credit bureau score.

According to the researchers, the results “suggest that even the simple, easily accessible variables from the digital footprint proxy for income, character and reputation and are highly valuable for default prediction.” For example, the results were consistent with another study that found that owning an iOS device is one of the best predictors for being in the top quartile of the income distribution – a finding which means that a consumer’s choice of device is “an easily accessible proxy for otherwise hard to collect income data.” In addition, the researchers found that customers coming from a price comparison website were almost half as likely to default as customers being directed to the website by search engine ads (which the researchers note is consistent with marketing research documenting the importance of personality traits for impulse shopping), and that customers having their names in the email address were 30% less likely to default.

The researchers also found that digital footprints today can forecast future changes in the credit score, which they state provides indirect evidence that the “predictive power of digital footprints is not limited to short-term loans originated online, but that digital footprints matter for predicting creditworthiness for more traditional loan products as well.”

Additionally, the researchers found that the digital footprint complements rather than substitutes for credit bureau information, indicating that a lender that uses information from both sources (credit bureau score + digital footprint) “can make superior lending decisions.” The researchers observe that “a few variables from the digital footprint can (partially) substitute for variables that are otherwise more expensive to collect, otherwise take significantly more effort to provide and process, or might only be available to a few lenders with specific access to particular types of information.”

Furthermore, the researchers note that digital footprints “can facilitate access to credit when credit bureau scores do not exist, thereby fostering financial inclusion and lowering inequality.”

The researchers acknowledge that these findings have implications for consumers, firms, and regulators. Consumers could be incentivized to change their behavior if digital footprints are widely used for lending decisions, firms associated with low creditworthiness products may object to the use of digital footprints and



may hide the digital footprint of their products, and regulators are likely to follow and scrutinize whether digital footprints proxy for variables that are legally prohibited to be used for credit scoring (including fair lending laws).