MasterCard

compendium

Enabling financial inclusion through "alternative data"

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Problem

Globally, almost 50% of adults are "financially exlcuded" — they do not have access to banking-type services, including the ability to access credit.

Solution

Promising potential substitutes to "traditional data" are emerging that can make financial inclusion possible:

1. **Mobile prepaid**
2. **Psychometric testing**
3. **Social data**
4. **Payment/eCommerce transactions**

Roughly half the adults globally have no access to banking-type services of any description. That includes the ability to obtain credit. Here is a plan for lenders to use "alternative data" to extend credit to the financially excluded and access an unserved market while contributing to economic development at the same time.

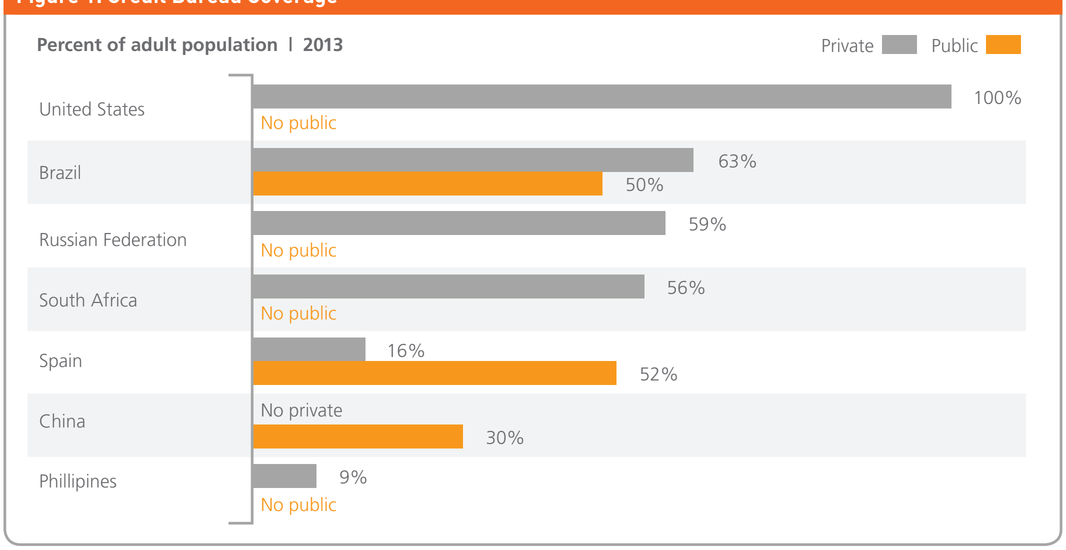
In developing markets, credit assessment of individuals unknown to a lender is often subjective, time consuming and expensive, potentially involving home visits by loan officers to interview applicants and their neighbors. Credit bureau coverage may be patchy or non-existent, reflective of the fact that many consumers in these markets have little or no history with financial institutions. In such environments, some lenders instead focus on cross-selling to existing customers or catering to those for whom credit history information is more readily accessible (typically, the more affluent). As a result, non-customers may be shut off from credit or face higher than necessary borrowing costs as lender costs are passed along to borrowers in the form of higher interest rates and fees. The main alternative for most in such circumstances is to borrow from friends and family.

Being shut out from credit is a problem in high income economies too, with some consumers unable to access credit due to the "thin file" problem or limited credit bureau coverage. Even in the most developed markets, credit bureaus may hold data on only a portion of the population **(Figure 1)** and have little information (i.e. "thin files") on others, including the "unbanked",

Figure 1

Credit Bureau Coverage

Figure 1: Credit Bureau Coverage



Source: MasterCard Advisors research & analysis, 2014 | World Bank, 2013

In developing markets, credit assesment of individuals unknown to a lender is often subjective, time consuming and expensive

new entrants to the labor market (e.g. graduates), homemakers returning to the labor market and recent immigrants or returning expatriates.

A fundamental issue is that underwriting processes in both high income and developing markets rely heavily on financial data inputs for the consumer. For many individuals globally, these "traditional data" inputs are simply unavailable for underwriting purposes, serving as an obstacle to consumer credit and one that impedes financial inclusion in both high income and developing markets.

However, promising substitutes for traditional measures of credit risk are emerging. So-called "alternative data" from prepaid mobile-phone information, psychometric testing, social media activity and records of online transactions offer new approaches to risk assessment. Between them, they provide four distinct paths to financial inclusion:

1 **Mobile prepaid.** An estimated 1.6 billion of the 2.5 billion "financially excluded" have mobile phones, most of them prepaid. Several risk-solution providers — Cignifi, First Access and MasterCard Advisors among them — have developed models showing that prepaid-mobile history and phone usage are predictive of ability — and willingness — to repay loans **(Figure 2)**. Just a few months of mobile data for an individual can provide a sufficient sample.

For instance, initiating calls (as opposed to receiving them) and calls of long duration have been shown to be positive indicators of credit worthiness. Conversely, in some models, receiving relatively high numbers of calls during normal working hours or having a small network of people in one's calling circle are characteristics associated with low credit scores.

Risk models based on mobile prepaid data may provide the greatest benefit to developing markets with high unbanked populations and little-to-no credit bureau presence.

2 **Psychometric testing.** Psychometrics refers to the use of questionnaires to measure knowledge, abilities, attitudes and personality traits. By analyzing responses to a series of questions or quizzes, firms like VisualDNA and EFL have predicted willingness to repay and other risk factors and generate a personal credit-risk score lenders can use in assessing applicants **(Figure 3)**.

For example, questions that gauge an applicant's impressions and relationships with others provide insight into trustworthiness and likelihood of repayment. Similarly, gauging the ability of an applicant to think logically in adverse situations suggests how the applicant might react if their financial position were to deteriorate.

Psychometrics are already being used for credit scoring in a number of countries **(Figure 4)**. The technique may be best suited to markets with both a significant "thin-file" problem and widespread internet access.

3 **Social data.** Social-media usage and other online activity can generally be defined as "social data". For firms like Lenddo, DemystData and Kreditech, social media are a rich source of

Figure 2

How Some Providers Use Mobile Prepaid Data for Credit Assesment

Figure 2: How Some Providers Use Mobile Prepaid Data for Credit Assesment

Solution Provider	Markets Where Deployed / Piloted	Sample Traits That Impact Risk Model Score	Solution Impact (Examples)	Loan Types for Which Solution Has Been Used / Validated	Institution Types Using for Credit Risk Assessments
Cignifi	Mexico, Chile, Brazil, Ghana (planned)	• Minutes per call • Time of day phone used • Call duration • Who initates call • Location of caller • SMS and data activity • Timing, frequency, amount of 'top up'	Back-testing on consumer loan data in Brazil suggested 25%+ rise in approval rate possible without added risk	• Credit cards (revolving credit) • Short term consumer loans	• Banks • Insurers
First Access	Tanzania	• Mobile, water, utilities and educational payments history • Proportion of calls initiated by applicant • Size of network of people called • Frequency of 'top ups'	• Lenders save $12+ per evaluation compared to previous methods • More than 75,000 loan recommendations in the first 18 months	• Microloans • Installment loans • Short-term loans • Agricultural loans • SME loans • Solar lamp loans • House improvement loans	• Commercial banks • Microfinance institutions • For- and non-profit financial institutions

Source: Company interviews, 2014 I MasterCard Advisors research & analysis, 2014

information **(Figure 5)**. A solution provider using social data may avail of well over 100 information sources — private and public — for their risk model. Some providers find online data useful in verifying identity and for estimation of income level and employment status. A common practice is for providers to cross-match data from multiple sources and compare them to self-reported information on a credit application.

In some models, the manner in which an applicant completes an online loan application provides indicators of credit worthiness. Taking time to carefully read an application and completing it from a home computer can be indicative of a better credit risk. In some risk models completing the application in all upper or all lower case is associated with greater a risk of loan default. Likewise, a strong online identity, such as long-standing social media accounts and a large network of contacts, improves an applicant's score.

Risk models that depend on "social data" are most useful in high-income markets with a widespread "thin-file" problem or when targeting middle-class consumers in less developed markets.

4 **Payment/eCommerce transactions.** Payments and related data captured by wholesale suppliers and online merchants are useful in assessing the credit worthiness of small businesses and their owners. AliFinance, which provides loans to small and medium-sized enterprises in China, controls credit risk with payment information harvested from borrowers who are also eCommerce merchants of Alibaba Group, the parent of AliFinance. The company accepts future receipts as collateral. It reports default rates of below 1%.

A different kind of example is Kabbage, which provides loans to SMEs in the United States and the United Kingdom using alternative credit scoring developed through partnerships with Amazon, UPS and Intuit. Data

Figure 3

What Some Providers Look for When Using Psychometric Testing

Figure 3: What Some Providers Look for When Using Psychometric Testing

Solution Provider	Key Attributes Examined		Sample Traits That Impact Risk Model Score
VisualDNA	• Openness • Conscientiousness • Extraversion • Agreeableness	• Neuroticism • Cognitive biases • Emotional stability	**Cognitive Biases — long and short term biases** (example): Does the applicant want to take a new credit card to satisfy an urge for a spending spree or because they recognize that there are peaks and troughs throughout the month and this form of credit will help them manage that.
Entrepreneurial Finance Lab	• Optimism • Self-confidence • Autonomy	• Acumen • Opportunism	**Opportunism** (example): Perception of one's own strengths and problem-solving abilities indicate capacity to overcome hurdles as they arise (and overconfidence which can lead to a lack of preparedness).

Source: Company interviews, 2014 I MasterCard Advisors research & analysis, 2014

Figure 4

How Some Providers Use Psychometric Testing for Credit Assesment

Figure 4: How Some Providers Use Psychometric Testing for Credit Assesment

Solution Provider	Markets Where Deployed / Piloted	Impact (Examples)	Loan Types for Which Solution Has Been Used / Validated	Institution Types Using for Credit Risk Assessments
VisualDNA	Russia, Turkey, Mexico, Malaysia, Poland, South Africa	• 23% reduction in default rate at same volume of business • 50%+ increase in thin file acceptance rate possible, without impacting default rate	• Credit cards • Personal loans	• Retail banks
EFL	Tanzania	• In Kenya, borrowers who scored in the bottom 25% were 7 times more likely to default than borrowers who scored in the top 25% • $230M in working capital loans to date • Average loan size ~$7,250	• Micro, small and medium enterprise (MSME) individual working capital loans • Credit cards • Consumer loans and revolving credit lines (pilot)	• Banks • VC lenders • Retailers offering consumer credit (pilot)

Source: Company interviews, 2014 I MasterCard Advisors research & analysis, 2014

used for scoring may include sales and shipments data, as well as customer feedback ratings.

Building a strategy that leverages "alternative data". Any lender seeking to leverage "alternative data" in credit decisions should, first of all, consider a partnership with a risk-solution provider experienced in using "alternate data". A successful strategy will include several or more of these steps:

1. Identify data sources that match the market. For instance, some of the approaches we've described, such as psychometric testing and social data, are better suited to markets with high internet penetration.

2. Build and refine risk models, but for situations in which sample sizes are small, build rule-based risk strategies. The validity of using mobile-phone, utilities, online or other "alternative data" is ideally "back-tested" on customer segments for which a great deal of information and payments history is available. Lessons from analysis of this known population may then be extrapolated to the general population.

3. Be sure to secure long-term access to the data most valuable to the risk model. Access to data for building or even testing a risk model is challenging in some markets. Mobile carriers in a given market don't necessarily share similar practices in data capture, data security and analytics.

4. Finally, institute pilot programs to continuously improve risk models. Feedback from pilots provide input for model refinements based on real-world experience.

Figure 5

How Some Providers Use Social Data for Credit Assesment

Figure 5: How Some Providers Use Social Data for Credit Assesment

Solution Provider	Markets Where Deployed/ Piloted	Sample Traits That Impact Risk Model Score	Solution Impact (Examples)	Loan Types for Which Solution Has Been Used or Validated	Institution Types Using for Credit Risk Assesments
Lenddo	Phillipines, Colombia	• Length of time social media accounts have been active • Number of "followers" or "friends" online • Number and diversity of Lenddo member connections and their Lenddo score	More than 250,000 members globally	• Credit cards (revolving credit) • Short term consumer loans	N/A: Self-funded loans
DemystData	U.S., U.K., Indonesia, Thailand and other markets; pilots in Mexico and Canada	• Consistency of identity components across various online sources • Confirmation of employment • Estimated income from online sources	• A short-term lender saw approvals raised from 12% to 25%+ • Reduced default rates	• Microloans • Installment loans • Short-term loans • Agricultural loans • SME loans • Solar lamp loans • House improvement loans	• Banks • Telcos • Specialty finance
Kreditech	Poland, Spain, Russia, Czech Republic and Mexico	• "Quality" of online network • Amount of time spent on loan application • Whether IP address matches location of work or home • Whether logging in from web café or home/office	• Default rates < 13% • 250,000 applications processed since 2012 launch • > 1,000 applications received daily • Average loan size €150	Short-term microloans	Partly under-writes loans, works with local lenders

Source: Company interviews, 2014 I MasterCard Advisors research & analysis, 2014