The Unbanked: Evidence from Indonesia

Don Johnston Jr. and Jonathan Morduch

To analyze the prospects for expanding financial access to the poor, bank professionals assessed 1,438 households in six provinces in Indonesia to judge their creditworthiness. About 40 percent of poor households were judged creditworthy according to the criteria of Indonesia's largest microfinance bank, but fewer than 10 percent had recently borrowed from a microbank or formal lender. Possessing collateral appeared as a minor determinant of creditworthiness, in keeping with microfinance innovations. Although these households were judged able to service loans reliably, most desired small loans. Calculations show that the bank, given its current fee structure and banking practices, would lose money when lending at the scales desired. So, while innovations have helped to extend financial access, it remains difficult to lend in small amounts and cover costs. JEL codes: G21, O16

Microfinance is built on a compelling logic: hundreds of millions of poor and very poor households seek capital to build small businesses, but their lack of collateral restricts access to loans. Innovative "microbanks" meet the demand with more flexible collateral requirements and thus unleash untapped productive power.[1] The narrative, highlighted by the Nobel Peace Prize committee in awarding the 2006 prize to Muhammad Yunus and the Grameen Bank of Bangladesh, has driven the global expansion of microfinance (Counts 2008).

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1. The Microcredit Summit's annual survey counted 133 million customers worldwide at the end of 2006, and an aim is to reach 175 million by 2015 (Daley-Harris 2007). The measure of the potential market has been hard to pin down. Elizabeth Littlefield, the CEO of the main donor consortium on microfinance, the Consultative Group to Assist the Poor, writes that "as many as 3 billion people still lack access to basic financial services," a figure subsequently cited in U.N. and World Bank publications (Littlefield 2006, p. vi).

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The notion of millions of unbanked households accords with evidence of most formal banks' shallow outreach to the poor (World Bank 2007; Armendáriz and Morduch 2005). But a lack of use does not imply a lack of access. Some among the "unbanked" may be excluded despite having worthy uses for capital. Others may simply not be creditworthy. And others may be creditworthy but not interested in taking on debt.

The proportions matter. Yunus's activist vision stresses the first group, suggesting that the unbanked are largely thwarted entrepreneurs. Their lack of financial access hinders their attempts to exit poverty through investment and hard work. According to Yunus (2008, p. 3), the key features of microcredit (the term he prefers) include the idea that the loans are designed "to help the poor families to help themselves to overcome poverty." Further, "it is not based on any collateral, or legally enforceable contracts. It is based on 'trust,' not on legal procedures and system." And specifically, "it is offered for creating self-employment for income-generating activities and housing for the poor, as opposed to consumption." In confronting conventional banking practices, Yunus continues that microcredit "was initiated as a challenge to the conventional banking which rejected the poor by classifying them to be 'not creditworthy.' As a result it rejected the basic methodology of the conventional banking and created its own methodology" Yunus (2008, p. 3).

Those who believe that other interventions may have bigger impacts on the poor than access to finance stress the second and third groups among the unbanked (those deemed not creditworthy or those not interested in being in debt), arguing that the net impacts of microfinance are apt to be smaller than advocates assert (Robinson 2001; Hulme and Mosley 1996). For these critics the poorest households need grants and social protection programs rather than loans, while for Yunus (2008, p. 3) credit remains a "human right" to be guaranteed for a broad swath of the very poor.[2]

Typical household data sets do not offer much insight into households' potential to benefit from financial access. Gauging creditworthiness, for example, typically requires an on-site professional assessment of unbanked households, a task well beyond the competence of typical survey teams. Yunus is also right in arguing that creditworthiness is in part a function of the lending technology. Someone not creditworthy in the eyes of a bank, for example, may be an excellent customer of a microfinance institution. So, the fundamental debates persist.

This article examines data from Indonesia, an important early site for microfinance (Patten and Rosengard 1991). The survey covers 1,438 Indonesian households in six provinces in fall 2002. The authors participated in the survey

2. The definitions of "very poor" and "poorest" are not always precise. The Microcredit Summit organization uses a clear definition: households living on less than $1 a person a day at international prices or living on incomes that put them in the lower half of the poor population (Daley-Harris 2007). The sample of poor households here includes many who would be very poor according to the second element of the definition.

and sample design, and assisted in supervising data entry, together with staff from Bank Rakyat Indonesia (BRI), a state-owned bank whose microfinance unit has wide reach in rural areas and has been operating in its current form for nearly 25 years (Patten, Rosengard, and Johnston 2001; Robinson 2001). The sample frame is a randomized stratified sample drawn without reference to BRI's customer base.

The authors took advantage of the enumerators' professional expertise by assessing the creditworthiness of all households in the survey, whether or not they were borrowing or even interested in borrowing. Households were judged for their hypothetical feasibility for taking loans from BRI's microfinance unit.[3] The data thus offer a unique chance to assess the creditworthiness of slices of the general population using procedures applied by a long-established microfinance bank. The results show that although fewer than 10 percent of the poor have borrowed recently from a microfinance or formal sector bank (BRI's microfinance unit or another), nearly 40 percent are creditworthy according to BRI's standards for microlending. The finding supports Yunus's view that many of the unbanked are creditworthy in the light of microfinance practice, though the figure is well short of 100 percent.

BRI's lending methods and microfinance products compel particular interest since they have proven to be deliverable profitably and on a wide scale to low-income populations throughout Indonesia. Yaron, Benjamin, and Charitonenko (1998, p. 164) calculate that if BRI's microfinance unit functioned as an independent bank, it would have earned returns "well above those in the banking industry." Pretax returns to assets for the microfinance unit were 6.1 percent in 1995, twice that for many well performing commercial banks. In an unexpected twist, BRI's microfinance operation has turned out to cross-subsidize BRI's other divisions, all serving much wealthier customers (p. 167).

Households not deemed creditworthy by BRI's standards may prove to be good customers of banks and other lending institutions (cooperatives and nongovernmental organizations, for example) using alternative methods and a higher dose of subsidy. But a large unserved poor population is deemed creditworthy, even using BRI's relatively conservative criteria.

BRI's microfinance unit, unlike Grameen Bank, requires that borrowers pledge collateral but, like other microlenders, approaches collateral far more flexibly than do conventional banks. In keeping with this practice, the lack of collateral was cited as a deterrent by only about 10 percent of the households that are creditworthy but not borrowing from banks. Regression analyses of

3. BRI is a large full-service bank. Its microfinance unit is a subsidiary, based on small sub-branches located in towns, mainly in rural Indonesia. References here to BRI pertain to the BRI microfinance unit. As explained below, the creditworthiness questions focused on eligibility for borrowing using BRI's general microfinance loan product, Kupedes. A recent global microfinance survey finds that BRI's microfinance unit ranked fifth in the world in numbers of borrowers, first in numbers of savers, and first in portfolio size (MIX 2008).

the professional assessments of the enumerators concur. BRI's insight, as with most microlenders (but in contrast to most banks), has been to find better ways to lend against future household income flows, rather than to require that loans be fully secured by seizable assets of equal or greater value to loans. Collateral thus is more limited in determining creditworthiness here relative to traditional banking approaches.[4]

While some evidence aligns broadly with Yunus's vision, other evidence departs from it. First, financing small businesses is the most common use of loan funds, but about half the volume of borrowing by poor households in the survey is for nonbusiness purposes, including consumption. Important nonbusiness uses include paying for school fees, medical treatment, home repair or expansion, daily consumption, and social and holiday expenses. The finding holds for low-income households below regional poverty lines, just above the lines, and well above the lines. Despite the emphasis on "microcredit for microenterprise" by donors and leaders like Yunus, consumption credit appears as an important need of poor populations, not as a minor concern.

Second, transacting small loans remains challenging. Regression analyses, accounting data from BRI, and survey questions on actual and desired loan sizes show that most unbanked individuals in the sample seek loans too small to be profitable at the going interest rate, even for an innovative microlender like BRI. The evidence suggests that much of the problem of the unbanked rests not on their inability to service loans but on financial providers covering the costs of lending.

I. The Indonesia Microfinance Access and Services Survey 2002

The survey was completed in 2002 after the Indonesian economy had stabilized following the financial crisis of 1997–98. The rupiah–US dollar exchange rate rose from 2,383 rupiah (Rp) at the end of 1996 to more than 10,000 Rp in 1998. Inflation also jumped: the consumer price index rose from 115 in 1997 to 182 in 1998. Between 1999 and 2000, however, inflation was about 10 percent, and the rupiah has further depreciated since then, but not precipitously.

While the fall of President Suharto in May 1998 created uncertainties, the transitions to Presidents Habibie and Wahid were mainly peaceful (except in the several regions with secessionist movements). So, the end of 2000 had seen a year of relative calm for most citizens, and the survey respondents were again focusing on longer term plans and investments. By 2002 the financial crisis was safely over, though the political scene remained charged (Patten, Rosengard, and Johnston 2001; Robinson 2002).

4. This finding is echoed in a recent World Bank (2006) study. In a sample of five *kabupaten*, the report finds that 10–20 percent of households may have collateral problems but that lack of collateral does not stand out among the many reasons entrepreneurs cite for not borrowing.

The survey and sample frame map the financial landscape and gauge potential markets for microfinance in Indonesia. Collected in the second half of July and the first half of August 2002, the survey covers 1,438 respondents in six provinces: West Java, East Java, West Kalimantan, East Kalimantan, North Sulawesi, and Papua—provinces with 20.6 million households and 85 million people. The exchange rate was roughly 9,000 rupiah to the dollar on August 1, 2002.[5]

Two *kabupatens* (rural agencies), or *kotamadyas* (urban municipalities), were selected in each province, and from each *kabupaten/kotamadya*, three *kecamatan* (subdistricts) were selected at random.[6] From each *kecamatan*, two *kelurahan/desa* (villages or urban neighborhoods) were selected at random. And respondents were chosen at random from local censuses. There was no attempt to oversample bank customers, and the survey includes both customers and noncustomers. The final survey covers roughly 20 households in each of 72 villages or urban neighborhoods. The results here are weighted (and standard errors are corrected) to reflect the stratification by province and district.

The main enumerators were BRI loan officers, with quality checks and supervision by Jakarta-based BRI staff, with the authors' input. Loan officers were not permitted to collect data in the regions in which they worked, to rule out biases due to collecting information on their own customers or potential customers. The survey gives direct evidence on the living standards of households—on wages and on enterprise revenues (but only a partial reckoning of the cost of family labor and the imputed cost of flows of services and depreciation of assets). The data generate a measure of per capita income for each household, for comparison with regional poverty lines.

The poverty rate for survey households is slightly higher than the official statistics for the country. For rural areas the sample poverty rate is 26.3 percent compared with 21.1 percent in the official statistics. In urban areas the rates are 18.3 percent and 14.5 percent. There is considerable debate about setting poverty lines in Indonesia and the official measures used as a benchmark. Assuming a 30-day month and converting at official exchange rates, the national poverty lines are 36 cents a person a day in rural areas and 48 cents a person a day in urban areas (purchasing power corrected lines are higher).[7] In

5. The exchange rate is from Bank Indonesia. On August 1, 2002, the official sell rate was 9,564; the buy rate was 8,564. Historical exchange rates are available at www.bi.go.id/bank_indonesia_english/monetary/exchange/.

6. The *kabupaten/kotamadya* selected for this survey were: West Java—Kabupaten Purwakarta and Kabupaten Bandung; East Java—Kotamadya Madiun and Kabupaten Malang; West Kalimantan—Kotamadya Pontianak and Kabupaten Sanggau; East Kalimantan—Kabupaten Kutai and Kotamadya Samarinda; North Sulawesi—Kotamadya Manado and Kabupaten Minahasa; and Papua (Irian Jaya)—Kotamadya Jayaura and Kabupaten Manokwari.

7. Province data are calculated by Statistics Indonesia (Budan Pusat Statistik), drawing on the 2002 National Socioeconomic Survey (Susenas). There was no price survey for 2002 in Papua, so the poverty line there is the 2001 line increased by the average urban (30 percent) and rural (20 percent) increases between 2001 and 2002 for all Indonesia.

TABLE 1. Summary Statistics for the Sample

Variable	Number of Observations	Mean	Linearized Standard Error
Active borrower anytime between 1999 and 2002 (percent)	1,411	26.5	3.9
Formal or micro bank borrower 1999–2002 (percent)	1,411	23.3	3.3
If per capita income < poverty line	327	7.5	1.8
If per capita income is 1–3 times the poverty line	604	22.1	3.2
If per capita income is more than 3 times the poverty line	474	45.2	5.3
Log(loan amounts in the last two years)	1,396	7.0	0.4
Creditworthy (percent)	1,410	60.5	3.3
If has a household enterprise	1,014	70.5	3.8
Log(feasible maximum amount[a])	1,380	10.8	0.4
If is creditworthy	899	15.0	0.1
If has a household enterprise	994	11.8	0.4
Log(desired loan amount)	1,003	14.5	0.1
Return on assets[b] (5 percent highest trimmed)	930	0.2	0.0
Has a household enterprise (percent)	1,438	70.3	3.5
Has savings in a savings institution (percent)	1,438	41.5	5.1
Saves but does not borrow (percent)	1,438	16.2	2.2
If has savings in a savings institution	719	39.0	4.1
Percentage of amounts of all loans used for household purposes, if reported loans	544	39.7	4.6

Note: The sum of subsample observations can differ from the full sample when the subsample variable includes missing values. All means were obtained with Stata's survey command. For log variables, zero values were replaced with log(100).

[a]The maximum amount that loan officers would lend to the respondent if creditworthy ("feasible"). Values for noncreditworthy respondents were set to log(100) in the full sample.

[b]Calculated only for households that have a household enterprise, as net revenue/total household and business assets.

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

the descriptive statistics incomes are normalized as multiples of regional poverty lines, with most income data falling between half the local poverty line and five times that line.

II. POVERTY AND CREDITWORTHINESS

About a quarter of the sample had borrowed in the three years prior to the survey, and the probability of borrowing specifically from a formal bank or microfinance bank rises steadily with household income from 7.5 percent for poor households to 22 percent for nonpoor households with per capita income up to three times the poverty line (table 1). About 45 percent of better-off

households borrowed from formal or micro banks.[8] The greater probability of borrowing from formalized sources as income rises is consistent with greater access to finance (a greater chance of being judged creditworthy coupled with greater proximity to banks) and stronger demand for loans among higher income groups. The result holds in regressions with a range of control variables.

Of households in the sample, 70 percent have a household enterprise. Of those households, 70.5 percent are deemed creditworthy by the bank staff collecting the survey. In the full sample, 60.5 percent are deemed creditworthy, a fraction that also increases with income. One interest here is in better understanding who is creditworthy.

Creditworthiness

An important motivation for the survey was to identify untapped markets. To that end, the survey took advantage of the fact that most enumerators were credit officers (*mantri*) participating in a region different from their usual place of employment. At the end of the survey, the enumerators were asked to use their professional judgment to evaluate individual households. The evaluation was not shared with the household. The specific question focused on the household's potential creditworthiness for borrowing from BRI—with BRI's existing line of loan products and processes. The enumerators were also asked about the amount of credit, the term of credit worth giving, and for households assessed as not creditworthy, the reason for that decision. The question was: does this household have the capacity to reliably borrow and repay a loan? Separate analysis investigated creditworthiness in a different sense, asking whether making loans to the household would lead to profits or losses for the bank.

The hypothetical loans (characterized explicitly as part of the bank's Kupedes microloan product) are typically for working capital or fixed capital investments in small business, but loan officers also use the product to lend against salaries for customers with steady paychecks. Kupedes loans can be as small as $3 and as large as about $5,000, with loan terms ranging between one month and three years.[9] At the time of the survey, the annual effective interest rate on BRI loans was about 40 percent (2.5 percent per month). In practice, though, roughly 90 percent of borrowers get part of their interest costs back in the form of a rebate. If borrowers make all of their payments within a six-month period in a timely manner, they get back 0.5 percent per month,

8. "Micro" banks include credit unions and cooperatives and other banking institutions that are neither fully commercial nor "informal." Some call them "semi-formal" since they are not commercial but maintain professional practices and depend on rules that apply to all customers, rather than rules that vary with customers. Informal providers include moneylenders, local credit and savings clubs, neighbors, and relatives.

9. Details are from the BRI website, accessed April 12, 2008; see www.bri.co.id/english/produk/produk.aspx?id=2.

making the net annual effective interest rate about 32 percent. Otherwise, the 0.5 percent is kept by the bank as a penalty.

While BRI requires collateral, it seldom takes legal action to take possession of the assets (except in cases of suspected fraud). Loan officers are fairly flexible in what they will accept as collateral, but they typically choose property or vehicles. They are also flexible about required ownership documents: a tax receipt can substitute for formal title. Previous BRI surveys show that about 90 percent of Indonesian households have assets that would qualify as collateral, and the requirement is not viewed by the bank as a major block to the depth of outreach (BRI 1997, p. 7).

Many more households were deemed creditworthy than are actually borrowing from formal lenders: enumerators deemed that 38 percent of households below the poverty line were potentially feasible borrowers from BRI, 64 percent in the middle group, and 82 percent at the top (table 2).

The enumerators identified creditworthy households far down the income ladder, and the results suggest the difficulty in making blanket statements about the poor and their opportunities. Yunus (2008) argues that credit is a "human right" even for the poorest, suggesting an imperative to make lending universal. But others, like Robinson (2001, p. 21), argue that the very poor are likely to be ill-suited for commercial borrowing, a result echoed in the determination by enumerators here that 62 percent of the poor households in the sample would not be good prospects for borrowing (see table 2). But the enumerators identified 38 percent of poor households that would be viable borrowers—given BRI's existing loan products and processes. Even at per capita income under half the official poverty line, enumerators identified 36 percent of households as creditworthy. At every level of income, many more households were deemed eligible to borrow than were actually doing so (figure 1). The question is, why do the gaps persist?

Collateral

One often-cited reason for gaps in credit markets is the lack of collateral (Stiglitz and Weiss 1981). Hernando de Soto (2000) argues strongly that the lack of legal title to assets holds back the poor. His argument hinges on the ability of title to transform assets into collateral and thus to secure capital, ultimately generating income for the poor. Without title, he argues, the capital is "dead," unhelpful in generating the leverage needed to climb from poverty.[10]

The average asset holdings (and possession of title or other ownership documents) is not dramatically different for households below the poverty line and those one rung up the income distribution (row 2 of table 2). While households on the rung just above the poverty line have more assets, they are not much more likely to have better documentation.

10. See Woodruff (2001) for a critical review of de Soto's (2000) *The Mystery of Capital*.

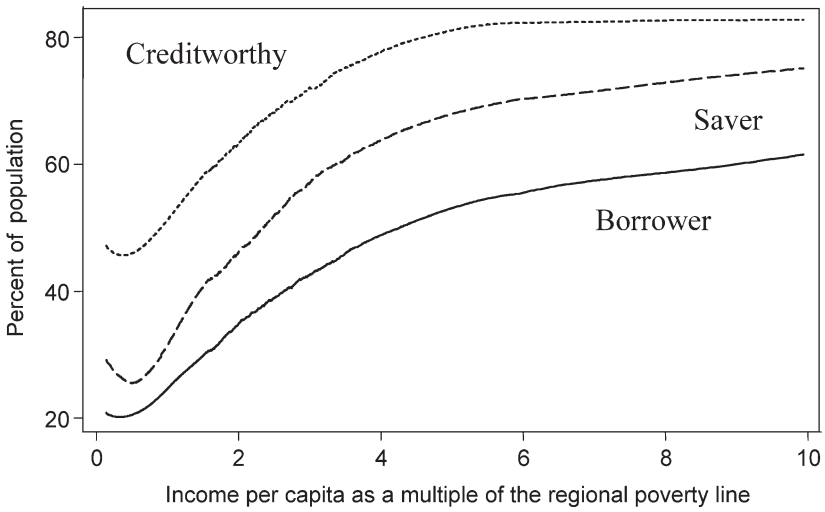
TABLE 2: Creditworthiness and Assets

Creditworthiness Indicator	Per Capita Income is below the Poverty Line	Per Capita Income is One to Three Times the Poverty Line	Per Capita Income is more than Three Times the Poverty Line
Creditworthy?	38 (5)	64 (4)	82 (5)
Assets			
Fixed assets (million rupiah)	25.5 (3)	37.7 (4)	99.9 (22)
Assets with legal title (percent)	24 (9)	27 (5)	44 (6)
Assets with other documents (percent)	68 (8)	69 (6)	54 (6)
Number of observations	330	617	485
Reasons for lack of creditworthiness (percent)			
Security deficient	1.9 (1.2)	3.6 (2.6)	3.8 (3.8)
Income deficient	81.3 (5.0)	78.1 (5.0)	68.4 (13.2)
Poor character/history	1.7 (1.7)	0.3 (0.2)	0.04 (0.04)
Administrative problems/other	15.1 (3.8)	17.9 (5.5)	27.7 (11.6)
Number of observations	168	215	81

Note: Reasons for lack of creditworthiness are as described by enumerators' professional and confidential assessment of creditworthiness. Numbers in parentheses are adjusted standard errors.

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

FIGURE 1. Likelihood of being Judged Creditworthy, being a Borrower, and using a Savings Account or Device



Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

TABLE 3. Creditworthiness

	Creditworthy, All		Log(Feasible Max Amount) All (Left-Censored Tobit)	Log(Desired Amount) All	Creditworthy Household Enterprise	Log(Feasible Max Amount) Household Enterprise (Left-Censored Tobit)
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Log(desired loan amount in million rupiah)		0.155***				
		(0.041)				
Desired loan amount < 1.9 million rupiah		−0.198				
		(0.171)				
Desired loan amount < 1.3 million rupiah		0.035				
		(0.172)				
Log(per capita income in million rupiah)	0.101**	0.072	1.417***	0.227***	0.034	0.277
	(0.048)	(0.066)	(0.499)	(0.071)	(0.059)	(0.450)
Log(total fixed assets in billion rupiah)	0.083**	0.063*	1.059**	0.216***	0.152**	1.915***
	(0.039)	(0.034)	(0.502)	(0.054)	(0.066)	(0.739)
Share of fixed assets with title	0.025	0.013	−0.152	0.121	0.091	0.562
	(0.082)	(0.137)	(1.218)	(0.292)	(0.097)	(1.193)
Share of fixed assets with other document	−0.046	0.044	−0.865	−0.094	0.069	0.484
	(0.088)	(0.123)	(1.406)	(0.243)	(0.063)	(1.069)
Log(monthly return to total assets, 5 percent highest trimmed)					0.133***	1.759***
					(0.042)	(0.543)
High/Above average business risk					0.158	1.288**
					(0.103)	(0.644)
Number of quiet months is above median					−0.035	−0.573
					(0.089)	(0.858)
Rural	−0.128	0.093	−3.487	−0.452	0.083	−0.209
	(0.174)	(0.105)	(2.649)	(0.327)	(0.168)	(1.819)
Poor × Rural	−0.139***	−0.081	−2.273***	−0.325**	−0.147	−1.942**
	(0.049)	(0.071)	(0.634)	(0.137)	(0.100)	(0.786)

Log(household age)	−0.083	0.042	−1.027	−0.504***	−0.145	−1.608
	(0.067)	(0.071)	(0.927)	(0.148)	(0.118)	(1.111)
Log(household education)	−0.047	−0.099	−0.321	0.329***	−0.114*	−0.797*
	(0.052)	(0.077)	(0.581)	(0.079)	(0.058)	(0.442)
Log(household size)	0.092	0.037	1.516	0.495***	0.113	1.161
	(0.080)	(0.088)	(0.965)	(0.187)	(0.086)	(0.755)
Female head of household	0.027	0.037	0.190	0.026	0.037	0.036
	(0.104)	(0.144)	(1.228)	(0.234)	(0.120)	(1.101)
Constant			−21.956**	10.460***		−19.090
			(9.484)	(1.108)		(16.389)
Log(σ)			1.824***			1.615***
			(0.055)			(0.069)
Number of observations	1,366	957	1,338	969	919	903
R^2				0.486		

*Significant at the 10 percent level; **significant at the 5 percent level; ***significant at the 1 percent level.

Note: Numbers in parentheses are standard errors. Dummy variables for *kecamatans* (geographic area) were included in all models but are not displayed. The feasible dummy variable has 1,410 observations. The log(feasible max amount) has 1,380 observations, after replacing by log(100) if not feasible. Desired loan amount has 1,003 observations. It was supposed to be asked only of respondents who never borrowed, but data cross-tabulations do not indicate this. The numbers of observations vary because of dropping *kecamatans* and missing values in other variables. In columns 5 and 6 the sample is limited to 1,027 households with an enterprise; the variable return on assets was trimmed so the usable number of observations is 930. Dependent variables are columns 1, 2, and 5, a dummy variable equal to one if the enumerator judged the respondent creditworthy; 3 and 6, the log of the maximum loan amount (in million rupiah) that enumerators would lend to creditworthy respondents; and 4, the loan amount that nonborrowers would like to borrow from a formal financial institution if they had the opportunity. Binary dependent variables were estimated with probits, and coefficients indicate the marginal effect from the mean; logs were estimated with ordinary least squares; all regressions were estimated using survey commands. For the log of income and assets, zero values were replaced with log(100). For the log of household education, zero values were replaced with log(1.1).

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

The enumerators were asked why they rejected the given households. For poor households, 81 percent of the time the reason centered on deficiencies in the household's income or business rather than on the ability to pledge assets as security (bottom panel of table 2). A lack of collateral was highlighted less than 2 percent of the time. The result is consistent with BRI's lending method, based in large part on lending against expected household income flows (and the bank's confidence in timing loan repayment installments to capture cash flows before they are diverted). The approach departs from the traditional banking method of lending primarily against assets.

Table 3 presents regression analyses of the correlates of creditworthiness. Columns 1, 2, and 5 focus on the enumerator's yes–no decision using probit estimation, where a binary indicator of the staff member's judgment of creditworthiness is the dependent variable. The coefficients have been transformed to give marginal effects relative to the mean. Creditworthiness is, of course, seldom a black or white idea, and columns 3 and 6 focus on the enumerator's estimation of how much money BRI would lend, modeled as a Tobit. Column 4 investigates how much individuals would like to borrow from a formal source if given the chance. Specifications include fixed effects for district to control for regional differences, and robustness checks with fixed effects for enumerator did not yield important changes in the results.

Column 1 shows that creditworthiness rises with income and asset-holding, even after controlling for location, household average age, education, size, and whether the household is headed by a woman. Neither question on assets with a title (a formal title or another formal document, like a tax receipt) enters significantly, and the coefficients are relatively small. The finding, in keeping with the summary statistics, plays out in all six columns. (As a robustness check, the regressions were disaggregated by income group, with similar results, which are not reported here.)

The coefficients give associations not causal relationships. The positive association of creditworthiness with income and assets may be due in part to reverse causation (people who are more creditworthy gain access to finance, which then yields income and provides resources to secure title). To the extent that endogeneity affects the coefficients on the two titling variables, the bias ought to be positive. Thus the "nonresults" here on titling are all the more striking, since endogeneity bias would push the coefficients upward.

The remaining columns in table 3 yield results similar to those in the first column: having more assets is always positively associated with creditworthiness. Column 5 shows that for households with businesses, greater profitability (as measured by returns to assets) increases creditworthiness, an unsurprising finding. Neither risk nor seasonality is a critical correlate of creditworthiness. The results in most columns indicate that being poor and living in a rural district strongly diminish the association with creditworthiness. For example, in column 1, the coefficient on the indicator for being poor and rural in the regression on being judged creditworthy is -0.139, even after controlling for

income and rural status. The rural poor appear to face particularly large gaps: they are both less likely to be deemed creditworthy and less likely to be deemed worthy of a relatively large loan conditional on creditworthiness.

Small Desired Loan Sizes

The survey asked: "If this household can borrow the desired amount of money from a formal financial institution, what would be deemed the most appropriate use for said loan? What is the desired loan amount?" The questions are asked only of households that have not recently borrowed and provide the opportunity to gauge whether loan officers take loan size into account here.

Column 2 of table 3 shows that households seeking larger loans are more likely to be deemed creditworthy, a bias that pushes banks toward better-off customers. The result emerges even after controlling for income, location, education, and asset-holding. The second and third rows focus on the correlation with knowing that customers seek loans that are particularly small, while the first row picks up the overall association with desired loan size.

"Particularly small" is used here in a precise sense. BRI estimated the minimal loan size that allows it to break even on a loan transaction (Bank Rakyat Indonesia and Harvard Center for Business and Government 2003). The calculation takes into account expected interest payments adjusted for nonpayment and the costs of lending (including staff salaries, training, and supervision). In December 2002 the breakeven loan size was Rp 1.9 million (about $210), the amount needed to cover total costs. If the bank aims only to cover the marginal cost of additional lending, the December 2002 figure is Rp 1.3 million (about $145). In column 2, the indicator of seeking a loan under the Rp 1.9 million threshold takes a sizable negative coefficient, though it is not significant. The indicator for seeking a loan under Rp 1.3 million is only 0.035, with a standard error of 0.17. The results are consistent with loan officers judging creditworthiness as the ability of households to repay loans but not—as a bank manager might—judging whether the loans make good business sense for the bank.

Introducing these variables also sharply reduces the size of the coefficient on the indicator from being rural and poor—from -0.139 in column 1 to -0.81 in column 2. The link is seen as well in column 4, which shows the strong association of desiring relatively small loans and being poor and rural. Serving poor and rural populations thus appears bound up with making small loans.

Table 4 probes further, giving descriptive data on the desire for small loans, disaggregated by income groups. For households under the poverty line, two-thirds of respondents desired a loan under the BRI Rp 1.9 million breakeven size (compared with 38 percent in the middle group and 25 percent among the better-off). A clear distinction can be seen among households judged creditworthy and those not. Here, 48 percent of creditworthy poor households seek loans under the breakeven line, while 79 percent of the noncreditworthy poor households do. The pattern is even sharper for the higher income groups. The bottom panel gives

TABLE 4. Percentage of Respondents Who Desire a Small Loan

Type of Respondent	Per Capita Income is below the Poverty Line	Per Capita Income is One to Three Times the Poverty Line	Per Capita Income is more than Three Times the Poverty Line
Desired loan amount < 1.9 million rupiah			
Full sample	67 (6)	38 (3)	25 (5)
If has an enterprise	60 (8)	30 (4)	30 (6)
If creditworthy	48 (10)	24 (3)	15 (5)
If not creditworthy	79 (7)	63 (6)	60 (13)
Number of observations in full sample	268	451	281
Desired loan amount < 1.3 million rupiah			
Full sample	62 (8)	35 (3)	21 (5)
If has an enterprise	54 (9)	27 (4)	26 (6)
If creditworthy	42 (8)	21 (3)	13 (5)
If not creditworthy	74 (9)	60 (6)	51 (14)
Number of observations in full sample	268	451	281

Note: Numbers in parentheses are linearized standard errors. Desired loan size was asked of 1,003 respondents, but the income variable is missing three observations among these. Percentages are of respondents who reported wanting to borrow less than 1.9 million rupiah (BRI's marginal cost of a loan) or 1.3 million rupiah (average cost to BRI in 2002 to transact a loan) if they could borrow from a formal financial institution.

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

similar numbers for desired loans under Rp 1.3 million, the marginal cost of lending. Sixty-two percent of poor households desire loans smaller than the threshold, and 42 percent of households deemed creditworthy do.

Table 2 showed that 38 percent of poor households in the sample were deemed creditworthy. Table 4 shows that 42 percent of those households seek loans too small to be profitable even for a microlender like BRI. Putting the pieces together suggests a gap in access to credit. Just 22 percent of the poor households in the sample are both judged able to repay loans and seek loans large enough to be profitable. Given that 7.5 percent of the poor households in the sample are already borrowing from a formal bank or microlender, the gap in access shrinks further. So, banks like BRI can go further in penetrating this population, but larger impacts will require innovations to reduce the costs of making small loans—or will require adjusting fees further upward.

Summary

Table 5 turns to the borrowing experiences of the households, echoing the results in table 3. There is a strong positive association of income and assets with financial use, even after controlling for a broad range of nonfinancial

TABLE 5. Borrowing

Independent variable	Active Borrower (1999–2002) (1)	Active Borrower from Formal or Micro Source (2)	Log(Amount of all Loans in Last Two Years) (3)
Log(per capita income in million rupiah)	0.032	0.043**	1.462**
	(0.027)	(0.020)	(0.668)
Log(total fixed assets in billion rupiah)	0.063***	0.065***	2.119***
	(0.017)	(0.016)	(0.672)
Share of fixed assets with title	−0.107	−0.033	−4.577
	(0.139)	(0.117)	(4.805)
Share of fixed assets with other document	−0.137	−0.134	−7.316*
	(0.129)	(0.103)	(4.218)
Household enterprise? (yes = 1)	0.015	0.011	2.245
	(0.048)	(0.046)	(1.573)
Rural	−0.458	0.103	7.470
	(0.291)	(0.079)	(4.731)
Poor × Rural	−0.190***	−0.151***	−6.555***
	(0.056)	(0.033)	(2.228)
Log(household age)	0.055	0.038	0.417
	(0.074)	(0.078)	(2.526)
Log(household education)	0.068	0.058	2.214
	(0.048)	(0.039)	(1.738)
Log(household size)	0.110*	0.073	4.334**
	(0.060)	(0.057)	(1.896)
Female head of household	−0.003	−0.036	−0.534
	(0.051)	(0.054)	(1.973)
Constant			−73.964***
			(12.876)
Log(σ)			2.387***
			(0.070)
Number of observations	1,362	1,362	1,347

*Significant at the 10 percent level; **significant at the 5 percent level; ***significant at the 1 percent level.

Note: Numbers in parentheses are standard errors. Dummy variables for *kecamatans* (geographic area) were included in all models and are not displayed. Numbers of observations vary from the total in the sample (1,438 observations) due to dropping *kecamatans* and missing loan amounts. Dependent variables are column 1, a dummy variable equal to one if the respondent borrowed between 1999 and 2002; column 2, a dummy variable equal to one if the respondent borrowed from a formal source or microlender between 1999 and 2002; and column 3, the log of all loan amounts taken in the two years before the survey; zero values were replaced with log(100). Columns 1 and 2 were estimated with probits and coefficients indicating the marginal effect from the mean; column 3 was estimated with a Tobit. Errors in binary regressions were corrected for the stratified survey structure.

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

variables. Being poor and rural is strongly associated with lower financial use, and there is very little role for having formal title or another document. In column 3, which considers the cumulative sum of borrowing rather than borrowing status, the titling variables are negative, in one case significantly so at the 10 percent level. The negative coefficients go against expectations. The

broad point is that once again the coefficients on the titling variables are neither positive nor large and statistically significant—and here they are surprisingly negative and remain a puzzle.

Taken as a whole, the evidence in tables 2, 3, and 5 yields a tempered view of de Soto's case. He appears to be too pessimistic about prospects for spreading banking to a large share of the poor without major titling campaigns. He is right that having more assets is closely associated with access to capital, but in this sample having formal title to those assets is not associated closely with professional assessments of creditworthiness for microfinance borrowing, nor do formal titles go far in explaining existing borrowing activity. This is good news for those who wish to expand financial access through innovative practices such as those followed by Grameen Bank and BRI. De Soto's case likely has more bite for lending at the small and medium-size enterprise level, but we the sample size is too small to draw any firm conclusions.

In a different way, though, de Soto is also too optimistic about the prospects for microlending, at least through a large lender like BRI. If lack of creditworthiness for the 62 percent of "rejected" poor households is a deficiency in income or business performance (as seen in table 2), low incomes will be far harder to overcome than simply by implementing a titling program. Moreover, table 4 shows that most individuals under the poverty line seek loans too small to interest a commercially minded microfinance bank like BRI.

III. Uses of Loans beyond Microcredit for Microenterprise

Microcredit has been closely bound up with the desire to promote microenterprises, the small businesses of low-income households. Many of the businesses are so small that they employ no one but the proprietor. Yunus's vision in building Grameen Bank was to reduce poverty by helping borrowers expand their small enterprises. Robinson (2001, Ch. 3), while disagreeing with Yunus at key points, also maintains the sharp focus on lending for microenterprise. She offers a stream of anecdotes that stress the way credit helps small businesses grow, taking examples from Argentina, Kenya, the Kyrgyz Republic, Indonesia, Nicaragua, Philippines, and Senegal (pp. 107–20). By helping to build microenterprise, it is hoped, microcredit can expand production and generate income for borrowers.

Table 6 affirms the importance of small business loans, but it also shows that half of the volume of loans of poor borrowers in the survey are for purposes unrelated to business.[11] The data give the stated use of the last loan taken from each source. Since less than a third of the sample borrows (and only a seventh of poor households), cell sizes are small; the total sample of

11. The findings complement small-scale surveys of 53 households in three sample branches of Grameen Bank that show that Grameen Bank loans, nominally made for business purposes, are often redirected toward nonbusiness ends (Rutherford 2006). Collins and others (forthcoming) present similar evidence from Bangladesh, India, and South Africa.

TABLE 6. Loan Uses (Percent of Loan Amount)

Loan use	Per Capita Income is below the Poverty Line	Per Capita Income is One to Three Times the Poverty Line	Per Capita Income is More than Three Times the Poverty Line
Loan use			
Business	48 (6)	54 (6)	50 (7)
Household	35 (8)	40 (7)	41 (7)
Other	15 (7)	5 (3)	7 (5)
Number of observations	68	201	269
Household enterprise?	85 (7)	78 (4)	67 (8)
Loan use if household has enterprise			
Business	54 (8)	68 (5)	62 (7)
Household	27 (8)	24 (6)	29 (6)
Other	15 (7)	5 (3)	7 (6)
Number of observations	55	145	168

Note: Numbers in parentheses are standard errors. Loan amounts are total amount of all loans recorded during the interview.

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

borrowers is just 538. Despite the small sample, the patterns are consistent—and similar for poor households and for borrowers above the poverty line. Stated uses of loans include home improvement, nonbusiness land or building purchase, school tuition, medical treatment, loan repayment, daily needs or retirement needs, vehicle purchase, household goods, ceremony or social expenditure, holiday needs, or jewelry purchase.[12]

Part of the explanation of the results rests with the fact that only 70 percent of households in the sample operate a family enterprise (though 85 percent of poor households do so). Not surprisingly, borrowing for business is somewhat more likely if a household has a business (see table 6, bottom panel). But even then, the share of borrowing for business purposes by poor households rises from 48 percent to only 54 percent.

Table 7 provides regression results restricted to the sample of borrowers, with the same type of specification used in table 5. The dependent variable is the percentage of a household's loans (by value) used for household purposes. In column 1 the share is not affected strongly by a household's wealth or income. Being more educated increases the prevalence of borrowing for

12. A related piece of evidence comes from households not currently borrowing from formal banks. These households were asked their favored uses for loans, if they were to borrow from a formal bank. With a sample size of 1,028, business uses were again important, but 31–44 percent of loans were marked for nonbusiness purposes.

TABLE 7. Loan Uses

	Loan Amounts used for Household Purposes (Percent)	
Independent Variable	1	2
Log(per capita income in million rupiah)	0.014	0.011
	(0.047)	(0.045)
Log(total fixed assets in billion rupiah)	0.002	0.003
	(0.031)	(0.029)
Share of fixed assets with title	−0.362*	−0.322
	(0.204)	(0.207)
Share of fixed assets with other document	−0.122	−0.152
	(0.166)	(0.175)
Household enterprise? (yes = 1)		−0.382***
		(0.118)
Rural	−0.596***	−0.607***
	(0.195)	(0.201)
Poor * Rural	0.173	0.138
	(0.166)	(0.135)
Log(household age)	0.099	0.072
	(0.113)	(0.103)
Log(household education)	0.271***	0.193***
	(0.054)	(0.053)
Log(household size)	0.008	0.070
	(0.075)	(0.073)
Female head of household	0.340***	0.241***
	(0.087)	(0.080)
Constant	−0.198	0.371
	(0.735)	(0.684)
Number of observations	533	533
R^2	0.252	0.320

*Significant at the 10 percent level; ***significant at the 1 percent level.

Note: Numbers in parentheses are standard errors. Dummy variables for *kecamatans* (geographic area) were included in all models and are not displayed. The full sample includes 544 respondents who reported loan amounts. The dependent variable is the percentage of all loan amounts used for household purposes. The model was estimated by ordinary least savings using survey commands.

Source: Authors' analysis based on data from Indonesia Mass 2002 survey.

consumption, largely because more educated households do not run microenterprises. Female-headed households are also much more likely to borrow for consumption, perhaps because income flows are less stable and diversified, requiring borrowing for consumption smoothing.

Column 2 controls for whether the household owns a business. The coefficient, −0.38, is strongly negative and statistically significant, as expected. Entering the variable does little to change the picture given by the other coefficients, however, which is a result that makes sense in light of the descriptive statistics in table 6: even households with household enterprises seek loans for nonbusiness purposes. In column 2, the share of assets with title is smaller and

no longer statistically significant, consistent with the variable serving as a proxy for having a business.

Preliminary analyses (not shown here) suggest that loans from the informal sector are tilted even more toward household purposes than loans on average. That piece of evidence, to the extent that it holds up in larger and different samples, complicates the ability to make the empirical leap embodied in an argument commonly heard in defense of the relatively high rates of interest charged by commercially driven microfinance institutions. Helms and Reille (2004, p. 1) compare interest rates charged by microlenders to rates charged in "informal credit markets (such as local moneylenders), which are even more expensive." To the extent that loans from informal credit markets are used for broadly different purposes than loans from formal sector and microfinance banks, microfinancial loans and moneylender loans are not obvious substitutes.[13]

IV. Conclusion

The "unbanked" are a broad and differentiated population, though often lumped together in policy analyses. Differentiating between households facing credit rationing and households not creditworthy or averse to debt is a critical first step in locating the frontiers of financial access. One of the most important findings here is that a substantial group of the poor households in the sample—roughly 40 percent—is creditworthy using the lending criteria of BRI's microfinance unit, the country's leading "commercial" microfinance provider. Fewer than 10 percent of poor households had recently borrowed from a formal bank or a registered microfinance bank, suggesting that the banking sector is far from exhausting the present market.

Part of the gap between financial use and creditworthiness may be narrowed through information and marketing drives, given that households may not know that they qualify for credit. But the evidence here does not provide optimism that banks will, on their own, make much effort to tell them: poor customers, especially those who seek small loans with limited profit potential for banks, are lower priorities for commercial microfinance banks in Indonesia. Two-thirds of poor households, when asked, desire loans too small to be profitable for microlenders like BRI (based on calculations from BRI's internal accounts).

The larger question is not whether a substantial number of borrowers below poverty lines are potentially creditworthy—the evidence suggests that they are. Rather, the question is a supply-side one: can potential borrowers be served within the constraints of an institution's business and social model? The

13. Another way to interpret the finding is that Kupedes loans are cheap enough (and for long enough terms) to use for business purposes, while the more expensive credit has to be reserved for more urgent, "distress" situations.

enumerators spent roughly an hour and a half with customers in their homes before making their judgments—time that would not normally be available to credit managers.

Policymakers can promote the expansion of financial access for the poor by supporting technological innovations (and their application) that lower the costs of screening potential customers (credit scoring) and that reduce transaction costs (hand-held computers in the field and automatic teller machines). In some areas, group-lending methods in the spirit of those pioneered by Grameen Bank can also cut transactions costs for institutions serving particularly poor customers.

The evidence also suggests a potential mismatch of products and customer demand. One consistent finding is the priority that households place on loans for consumption purposes, although many loan products are designed for supporting small-scale businesses. While microcredit advocates focus sharply on loans for business in promoting microcredit, microcredit customers in this sample look to the financial system to meet a much broader range of needs. The finding suggests the need to move from thinking exclusively of "microcredit for microenterprise" toward credit for general purposes.

The broadest implication, and perhaps the most important, is that reality aligns neither with Yunus's optimistic view that all (or nearly all) the poor can reliably service loans, nor with the pessimistic view that today's unbanked households are fundamentally noncreditworthy. A large minority of unbanked poor households have the demand and capacity to be reliable bank customers—as judged by bank staff themselves. The challenge remains to further develop business models that support lending at small scales.

References

Armendáriz de Aghion, Beatriz, and Jonathan Morduch. 2005. *The Economics of Microfinance*. Cambridge, Mass.: MIT Press.

BRI (Bank Rakyat Indonesia). 1997. "Introduction to BRI's Unit Banking System." Jakarta: Bank Rakyat Indonesia.

———. 2003. "Serving the Smallest Microenterprises through the BRI Units: Findings and Recommendations for 'Small-Scale' Kupedes Lending." Jakarta: Bank Rakyat Indonesia and the Center for Business and Government, John F. Kennedy School of Government. Cambridge, Mass.: Harvard University.

Collins, Daryl, Jonathan Morduch, Stuart Rutherford, and Orlanda Ruthven. Forthcoming. *Portfolios of the Poor: How the World's Poor Live on $2 a Day*. Princeton, N.J.: Princeton University Press.

Counts, Alex. 2008. *Small Loans, Big Dreams*. Hoboken, NJ: John Wiley.

Daley-Harris, Sam 2007. *Report of the Microcredit Summit Campaign*. Washington, D.C.: Microcredit Summit.

De Soto, Hernando. 2000. *The Mystery of Capital: Why Capitalism Triumphs in the West and Fails Everywhere Else*. New York: Basic Books.

Helms, Bridget, and Xavier Reille. 2004. "Interest Rate Ceilings and Microfinance: The Story So Far." Occasional Paper 9. Consultative Group to Assist the Poor, Washington, D.C.

Hulme, David, and Paul Mosley. 1996. *Finance against Poverty*. London: Routledge.

Littlefield, Elizabeth. 2006. "Foreword" to *Access for All: Building Inclusive Financial Systems*, by Bridget Helms. Washington, D.C.: Consultative Group to Assist the Poor.

MIX (Microfinance Information Exchange). 2008. *The MIX 100*. Washington, D.C.: Microfinance Information Exchange.

Patten, Richard, and Jay Rosengard. 1991. *Progress with Profits: Rural Banking in Indonesia*. San Francisco: Institute of Contemporary Studies Press/Harvard Institute for International Development.

Patten, Richard, Jay Rosengard, and Don Johnston Jr. 2001. "Microfinance Success amidst Macroeconomic Failure: The Experience of Bank Rakyat Indonesia during the East Asian Crisis." *World Development* 29(6):1057–69.

Robinson, Marguerite. 2001. *The Microfinance Revolution*. Vol. 1. Washington, D.C.: World Bank.

———. 2002. *The Microfinance Revolution*. Vol. 2. *Lessons from Indonesia*. Washington, D.C.: World Bank.

Rutherford, Stuart. 2006. "Uses and Users of MFI Loans in Bangladesh," *Micro*Save. Briefing Notes on Grameen II. (www.microsave.org).

Stiglitz, Joseph, and Andrew Weiss. 1981. "Credit Markets in Credit with Imperfect Information." *American Economic Review* 71:393–410.

Woodruff, Christopher. 2001. "Review of de Soto's *The Mystery of Capital*." *Journal of Economic Literature* 39(4):1215–23.

World Bank. 2006. *Revitalizing the Rural Economy: An assessment of the Investment Climate Faced by Non-farm Enterprises at the District Level*. Indonesia Rural Investment Climate Assessment. Jakarta: World Bank. (www.worldbank.org/id/rica).

———. 2007. *Finance for All? Policies and Pitfall in Expanding Access*. World Bank Policy Research Report. Washington, D.C.: World Bank.

Yaron, Jacob, McDonald Benjamin, and Stephanie Charitonenko. 1998. "Promoting Efficient Rural Financial Intermediation." *World Bank Research Observer* 13(2):147–70.

Yunus, Muhammad. 2008. "What Is Microcredit?" Grameen Bank, Dhaka. Retrieved April 12, 2008, from www.grameen-info.org/bank/WhatisMicrocredit.htm.