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CROSS-COUNTRY VARIATION IN HOUSEHOLD ACCESS TO FINANCIAL SERVICES

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Abstract

This paper presents estimates, for more than 160 countries, of the fraction of the adult population using formal financial intermediaries. The estimates are constructed by combining information on banking and MFI account numbers (together with banking depth and GDP data) with estimates from household surveys for a smaller set of countries. The resulting data are compared econometrically with information on poverty and inequality. There is some econometric evidence that better household access to finance may be associated with lower inequality as measured by the Gini coefficient, but less evidence that access is causally related to a lower poverty headcount.

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Introduction and Summary

This paper presents estimates across some 160 countries of the fraction of the adult population using formal (or semi-formal) financial intermediaries, whether through deposit accounts or by borrowing. The estimates are constructed by combining information (assembled by others) about banking and MFI account numbers (together with banking depth and GDP data) with estimates from household surveys for a smaller set of countries. The resulting data are compared with information on poverty and inequality. There is some evidence that better household access to finance is associated with lower inequality, but not that access is causally related to a lower poverty headcount.

The financial sector plays a multidimensional role in the process of development. It *mobilizes and concentrates* resources for investment and allocates them based on an assessment of risk and return, judging creditworthiness and monitoring performance; it offers *risk-reduction* and risk-pooling services that have both direct effects on welfare (by providing insulation from shocks) and indirect effects on growth, by making riskier – but potentially high-yield – investments in human and physical capital accessible. While much of the recent literature focuses on the interaction of enterprises, large and small, with financial markets and financial intermediaries, households are important consumers of financial products and household behavior influences the scale and asset mix of finance (Honohan, 2006).

Because financial asset holdings are highly concentrated, even more so than nonfinancial assets, the assets of the lower quartiles can be largely ignored in any discussion of national resource mobilization or aggregate financial wealth. Nevertheless (and as is confirmed in regressions reported in Section 3), it appears that countries with deeper financial systems have less absolute poverty, even after taking account of mean national income. This suggests that a deep financial system also affects the structure of the economy in indirect ways that are relevant for the inclusiveness of economic development.

However, as elaborated in Section 1 below, it is possible that poverty and inequality could be strongly influenced by the degree to which low income households have *access* to savings, risk pooling and payments services provided the formal financial sector. Indeed, the main focus of current policy concern with regard to household finance in developing countries is the perceived need to increase the access of poor households to basic financial services: deposits, payments, insurance and credit.

Relevant policies include regulatory design for microfinance institutions designed to ensure that measures intended to protect consumers against loss do not impose costs so heavy as to deter entry into this low end of the market, which is characterized by low margins despite the potentially high volume. The same applies to the design of AML/CFT measures intended to protect the integrity of the financial system against money laundering or its use to finance terrorism; the application of these measures to providers of financial services at the small scale needs to be proportionate to the risks involved and adapted to the capacity of the providers to comply.

Yet the body of research on what impact microfinance has had on poverty is surprisingly inconclusive. Although beneficiaries of microfinance schemes are vocal in their praise and gratitude, a comprehensive assessment needs to consider displacement effects and endogeneity of financial access. Only in a few cases so far has it been possible to devise convincing ways of adjusting for, or excluding, these complicating factors. On balance, most observers regard microfinance interventions as poverty-reducing, while continuing to call for further analysis of methodologies for increasing cost-effectiveness and sustainability of these initiatives. After all, most of them continue to benefit from external subsidies.

An alternative approach to detecting a direct influence of financial access on poverty and inequality requires the assembly of cross-country data. Quantifying household access on a cross-country basis is the focus of Section 2. This describes and implements a method

for combining data on client and account numbers at microfinance institutions and banks with the results of household surveys in a number of countries and macroeconomic data to generate a composite estimate of the fraction of adults using¹ the services of formal² financial intermediaries. The data clearly shows that this percentage is small in most developing countries. In contrast, access percentages in the 80s and 90s are recorded for households in advanced economies (where the relevant policy issues are therefore best discussed in the language of exclusion rather than of access).

Section 3 presents econometric evidence on the correlation between the new access data and poverty and inequality measures. Access percentages are correlated with poverty rates and national per capita income, but not very closely. More important, conditioning on mean national income, the partial correlation become insignificant. Intriguingly, then, the strongest cross-country econometric evidence for a financial sector impact on poverty relates to financial *depth* (here the total value of private credit in relation to GDP), and not financial *access* (percentage of households with an account).

On the other hand the new financial access percentages are somewhat more robustly correlated across countries with inequality as measured by the Gini coefficient, suggesting that better access lowers inequality. Inclusion of mean income and other variables does not eliminate the correlation (at least for the main subsample being used). In contrast, bank credit depth seems to lack explanatory power for the Gini coefficient.

1. How Could Access to a Bank Account Help Reduce Poverty?

¹ There is an obvious and important conceptual distinction between access and usage, and surveys often explore this (for further discussion, see Honohan, 2004b). In the present paper we treat the terms synonymously, which may not be too bad an approximation when equating access to the use of *any* financial product.

² The discussion is generally confined to the formal (and semi-formal) financial system and as such excludes borrowing from informal lenders and participation in, for example, informal rotating savings and credit schemes. The term “semi-formal” is intended to include microfinance institutions which might not be subject to regulation as financial intermediaries.

Casting our eyes to the bottom of the pyramid, we need to remind ourselves that, for lower income groups, the relevant question concerning their financial assets is not related to how much financial assets they choose to hold, and even less to how much they might choose to borrow from the financial system. These households encounter barriers to accessing financial services at all.³ This has led to a growing debate around the issue of financial exclusion in the advanced economies, where it is noted that a small but multiply-deprived group – perhaps 10 percent of the adult population – do not have access to financial services such as a transactions account, or even a savings account, much less a loan from a formal intermediary or an insurance policy.

In some cases product features, such as a high minimum cover for an insurance product, or heavy penalties for unauthorized overdrafts (hard for poor people to avoid if they are using checking accounts), or having a fixed address as a pre-requisite to open an account, represent material obstacles to use of such products. In other cases customers may be screened-out because of risk characteristics. Or rationalization of branches and service points may result in many poor customers having too far to travel to a branch to make an account worthwhile. Given the increasing extent to which full participation in economic life in the advanced economies depends on having an account at a financial intermediary, and given the material extra costs often imposed on non-account holders, several countries have adopted policies in recent years to reduce financial exclusion (Porteous, 2004; Carbo, Gardener and Molyneux, 2005; Kempson, 2006; Kempson et al., 2000).

In low and middle-income countries, though, ‘exclusion’ is normal for the bulk of the population, hence it becomes more natural to speak of broadening access to financial services rather than elimination of exclusion as the immediate goal. The exploding microfinance movement is driven by this motivation (Armendariz de Aghion and Morduch, 2005; Honohan, 2004b; Robinson, 2001). Microfinance pioneers have emphasized the very high rates of return that can be earned by the poor and the near-poor, especially in urban and peri-urban settings, resulting in a high demand for borrowings

³ Including transactions services—an important dimension for such households which can be associated with the holding of balances in transactions accounts, but which will not be further discussed in this paper.

even at high interest rates. Some microfinance institutions work on a credit-only basis, funding themselves from charitable donors and other sources; some employ forced savings elements to the loan scheme. The modern trend is to emphasize deposits as well as loans as key tool for efficient financial management, whether they represent precautionary savings, or a means of accumulating capital. Transactions accounts are also important for receiving and making internal and international remittances between family members. And microinsurance is beginning to be a significant element in the microfinance movement.

Does access to financial services through deposit or loan accounts reduce poverty? Numerous anecdotes illustrate paths to relative prosperity being paved by such financial services. However, there is typically a large element of selection bias, both at the level of the individual client (with the more energetic likely to experience growing loan and deposit balances) and at the level of the village selected for establishment of a microfinance institution (sometimes this is a negative bias, as charitable sponsors seek out the more deprived villages). Furthermore, there can be displacement effects, with non-beneficiaries of microfinance suffering in local markets from the beneficiaries. Despite an extensive quasi-promotional literature, detailed microeconomic analyses are, for these technical reasons, surprisingly non-committal about whether direct financial access has a major effect in reducing poverty (Honohan, 2004b).

What can be said at the macro level? Addressing this question evidently requires a cross-country data series on access. There are many dimensions to financial access, but to simplify matters, given the shortage of data, it is preferable to concentrate on one summary indicator. The most widely accepted indicator is the percentage of adults that have any type of account (including all types of transactions, savings or loan accounts) at a bank or other formal financial intermediary (World Bank, 2005). How many people in developing countries have access to a bank or other formal financial intermediary account? This empirical question is the subject of vigorous current investigation.

2. Measuring Household Access to Financial Services

This section discusses some recent contributions to measuring access of households to various forms of intermediary accounts, and proposed a new composite cross-country indicator of the percentage of the adult population with access to some intermediary account. The new series has the advantage of wide coverage and the drawback of relying on imputations which, for some countries, will seem rather shaky.

In recent contributions, two basic approaches have been used to get to grips with the problem of measuring overall financial access (Honohan, 2005). One is to go directly to households and survey their usage, whether as part of a wider household survey or a dedicated financial access survey. The other is to make inferences from data in the number of intermediary accounts. Here we propose a method of using overlaps between the country coverage of the different approaches to arrive at access estimates for 162 countries – or about three times the number of countries for which there is direct household survey data.

The first method of measuring access, namely the use of sample surveys of households or individuals, is the most satisfactory from a conceptual point of view. The surveys that have produced data here include general household surveys such as the LSMS series (which can include a savings module asking questions about the holding of savings) and specialized financial access surveys, such as the Finscope series which began in Southern Africa and are currently being rolled out in several other African countries.⁴ The series of Eurobarometer surveys in the European Union also ask such questions (cf. European Commission, 2005). Unfortunately the number of countries covered by household survey data remains modest, and there are indications of problems with the reliability some of the data collected.⁵

⁴ The developing country household survey percentages used here are drawn from the compilation in Claessens (2005), the original surveys were conducted with various methodologies and at various dates between 1988 and 2004.

⁵ The Eurobarometer surveys have been repeated on a roughly annual frequency with some startling year-to-year jumps in the responses, despite only small change in the questions answered.

The second method is to collect data on the number of accounts maintained at the financial institutions. This has been done in respect of *microfinance* in 148 developing countries by Christen et al. (2004) of CGAP, building on earlier compilations for more limited groupings. They include not only specialized microfinance institutions, savings and credit cooperatives, credit unions and other socially-oriented intermediaries (including some microfinance-oriented commercial banks) and they term these ‘alternative’ intermediaries.⁶ More recently, Peachey and Roe (2006) have augmented the CGAP database with figures for a number of *additional savings banks* (members of the World Savings Banks Institute), which had not been included by Christen et al. We describe this augmented set as the “WSBI database”. The additions are important. Many of the institutions added by Peachey and Roe, most of them postal savings banks, have very wide outreach by national standards: in 27 countries they represent more than 50 percent of the number of accounts recorded in their database. Furthermore, the additional banks include two very large ones (the Industrial and Commercial Bank, ICBC, of China and Sberbank, Russia, with 0.43 and 0.23 billion accounts respectively); these two banks alone account for the fact that the augmented dataset contains more than twice as many accounts – 1.46 billion instead of 0.67 billion – thereby sharply revising aggregate access estimates.⁷

Figure 2 presents the distribution across countries of number of microfinance accounts per 100 adult population using the WSBI series. It also shows the same for microfinance accounts that are not savings bank accounts (based on the CGAP numbers). It suggests a

⁶ Christen et al. define their coverage as including intermediaries that have a “double bottom-line”, reflecting social (access to finance) as well as strictly commercial objectives. They include government-owned development banks and savings banks. Scrutiny of the CGAP database revealed a handful of countries for which one or more large institutions was counted twice; adjustments to deal with this were made to the data for: BFA, LKA, MDG, NER, SEN, VNM.

⁷ A drawback here is that many of the banks added by the WSBI do not actually report the number of accounts; instead, for these banks, Peachey and Roe imputed account numbers on the assumption that the average account balance is 0.24 times annual mean per capita GDP in the country. For 15 countries estimated savings bank account numbers exceed 10 per cent of the national adult population. While their simplicity and retail emphasis makes the imputation much more realistic for most savings banks than it would be for commercial banks, it is questionable for a number of the WSBI member banks which have effectively evolved into full-service commercial banks. For this reason, we have made a new examination of all WSBI members for which the Peachey and Roe imputation method generates account numbers exceeding 12 per cent of the adult population, and made adjustments as set out in Annex 1 to AGO, BOL, CPV, MAR, MLT, MLI, MNG.

rather better access picture than indicated in earlier work, and in particular shows that ignoring the large government-sponsored savings banks leads to a considerable understatement of the number of bank accounts (though it should be noted that many of these savings banks do not offer credit services to individual customers);

A parallel exercise for *banks* was conducted mainly through a survey of banking regulators (Beck et al., 2005). Data on the number of deposits at 1999-2000 was obtained for 45 countries – 35 of them developing countries. (Data was also obtained in the same survey for average deposit size, the product of which with deposit numbers is a measure of monetary depth). However, this survey covers only those institutions regarded as “deposit money banks” and as such does not cover most microfinance institutions.

A number of difficulties arises in moving from these two databases to a reliable indicator of the proportion of households with financial access.⁸ One major issue is the problem of inferring the number of distinct and active accountholders from data on numbers of accounts, as many individuals have multiple accounts. On the other hand, some accounts are recorded even though they have long been inactive. There is sure to be a large variation from country to country and between different types of banks in the degree to which these problems result in the aggregate number of accounts exceeding the number of individuals with accounts. The typical individual in more advanced financial systems likely holds a greater number of accounts than in less advanced economies. And there are widely differing practices with regard to multiple accounts. For example, the ICBC – with the largest number of individual accounts of any bank, recently conducted a campaign to consolidate multiple accounts: For about 150 million customers, it had maintained over 400 million accounts.⁹

⁸ For one thing, there is unfortunately an overlap between the coverage of the two databases on numbers of accounts, as some deposit money banks are included in the WSBI sample. Rather than attempting to eliminate the overlaps, we have—as explained in the text—in effect chosen to aggregate the two sources in a way that is not inconsistent with the existence of overlaps.

⁹ The bank’s notice to customers dated October 18, 2005, urging them to close or merge accounts containing small balances, identifies no fewer than 11 classes of account which should *not* be closed. The figure of 150 million customers comes from the bank’s IPO prospectus, released in October 2006.

The issue of dating is also relevant. The various sources relate to different dates for different financial intermediaries. Mostly these are about the year 2000 but there is considerable variation. For most countries it may safely be assumed that these numbers don't change dramatically within a few years, the rise of microfinance means that this is not necessarily true for all countries.¹⁰

The proportion of households with an account will in general differ from the proportion of adults. The numerator and denominator both change, though, so the difference may not be large. Some of the surveys are based on household units (such as those from the LSMS program); others, such as Finscope, use individual adults as the unit. Here we simply use survey data based on both concepts interchangeably. The question of how best to splice data from the two types of sources deserves further study, but would seem to require more overlapping data than exists.

There are other loose ends. For instance, while the accounts at ICBC are included in the WSBI data, the 146 million active personal deposit accounts at another large Chinese institution, the China Commercial Bank are not, essentially because it is not a member of the WSBI. Both of these banks would be included in the concept of "commercial banks" employed by Beck et al. 2005 for their survey, though data for China has not been included in that survey.

Given these numerous difficulties it is heartening to discover that data on bank account numbers and on average bank account size (as a proportion of GDP) are quite closely correlated with household survey-based data on access percentages (Table A1, regressions A and B; and Figure 2).¹¹ The log-linear relationship is close enough to suggest using extrapolating fitted values for countries in which there is no household survey data available. Using the bank account database, this allows synthetic access percentages to be derived for about 45 countries.

¹⁰ For the regression results reported in Section 3, the other explanatory variables (and the poverty and inequality variables) refer, for the most part, to the late 1990s.

¹¹ Including the date of the household survey in the regressions changes little.

Even more encouraging, for countries where both exist, the bank account numbers are quite highly correlated with the WSBI numbers (Table A1, regression L). Thus, where the number of bank accounts is not known but the WSBI numbers are, we can use the fitted relationship to compute a substitute regressor. Using this substitute, we obtain G, which shows that the relation between accounts numbers and household survey data holds up well on a much wider sample. The coefficient values from G can then be used to approximate access percentages for all 138 countries in the WSBI database. As a further refinement, noting also the correlation between the deposit size data and GDP per capita (regression M) one can proceed in an analogous way using the fitted values from M as regressors in J, whose coefficient values in turn generates an alternative approximation to the access percentages. We call this alternative the *synthetic* access percentage.

A final adjustment is to replace this last mentioned synthetic access data with household survey-based data where available. The result is the *composite* indicator tabulated in Table 1, and on which Figures 2, 3 and 4 and Map 1 are based.¹²

To recapitulate and summarize, our main new data series, the composite indicator, is constructed as follows (see Box for algebraic treatment). For any country with data on access from a household survey, this surveyed percentage is copied in directly. For other countries the percentage is constructed as a function of the estimated number, and average size of, bank accounts. We proceed as follows. If there is no survey data on bank account numbers, an estimate of bank account numbers is generated as a function of MFI account numbers. If there is no data on average deposit size, an estimate of average deposit size is generated as a function of GDP per capita. The estimated access percentage is then generated as a function of the estimated no. of bank accounts and average deposit size. Each of the functional relationships used is based on an estimated regression relationship fitted to the countries for which the relevant data is available.

¹² As more refined information on specific countries is obtained, it is envisaged that this series will be updated. Map 1 includes eight countries not in the list by assuming that AUS, ISL and NZL are in the highest category; COD (formerly ZAR), GNB, TCD, MRT and SOM in the lowest category.

In notation, let m_i is the ratio of MF accounts and b_i the ratio of bank accounts to adult population in country i ; let h_i be the household survey-based percentage access, z_i the average deposit size and y_i per capita GDP.

Let $\hat{\alpha}_k$ be the fitted values in a log-linear regression of b on a constant term and m , and $\hat{\beta}_k$ the fitted values in a regression of z_i on a constant and y .

Then, let $\hat{b}_i = b_i$ for countries where data on b_i is available, $\hat{b}_i = \hat{\alpha}_0 + \hat{\alpha}_1 \log(m_i)$ otherwise; $\hat{z}_i = z_i$ for countries where data on z_i is available, and $\hat{z}_i = \hat{\beta}_0 + \hat{\beta}_1 y_i$ otherwise.

Let $\hat{\gamma}_k$ be the fitted coefficient values from a log-linear regression of h on a constant, \hat{b} and \hat{z} .

The *synthetic* access percentages are then obtained by computing $\hat{\gamma}_0 + \hat{\gamma}_1 \log \hat{b} + \hat{\gamma}_2 \log \hat{z}$.

Figure 2 shows the deciles for the synthetic and composite access indicators. Note that the synthetic indicator is distributed more evenly than the basic WSBI accounts numbers. The more even distribution is partly because of the use of a logarithmic transformation of account numbers, which shrinks the very high percentages. The logarithmic functional form is preferred by the data (as is indicated by regression F) and is consistent with the plausible idea that, as deposit account numbers grow, access percentages do not grow proportionately.¹³

Figure 3 shows the range and the median and mean across countries in each region of the developing world. Perhaps somewhat surprisingly Latin America and the Caribbean have the highest mean and median percentages, but the variation within each region is quite considerable. The lowest mean and median are for Africa and for the developing countries of Eastern Europe and Central Asia.

Figure 4 shows both a strong positive correlation between national mean per capita income and access percentages, and the fact that, at any given mean income level, access percentages vary widely. It also displays three outliers as noted whose access estimates must be regarded as particularly unreliable.

¹³ However, the spread of the actual distribution out of sample is likely to be also understated by the deciles shown, given that the fitted value has a much lower standard deviation than the actual within sample.

Figure 5 plots a widely used measure of the scale of financial intermediation through the banking system, namely private credit as a percentage of GDP (which we call banking depth for short)¹⁴ against the access series. It is clear that access measures a quite different dimension of the financial sector, as the two series are not highly correlated ($R=0.32$).

Despite the numerous shortcomings of the composite indicator, it has the great merit of distilling information from a variety of different sources and placing it on a common basis. No doubt the accuracy of the imputation for any given country may be highly questionable, but it can represent a first approximation to be revised as new data become available for each country. Furthermore, as a cross-country dataset, it has certainly potential for use in cross-country regression analysis, where econometric techniques can minimize the impact of stochastic errors.

3. Financial Access and Poverty: Is There a Cross-country Link?

While recognizing the shortcomings of the imputation procedures used to construct the composite indicator, as well as the limitations (outlined in the previous section) of the underlying data sources, the resulting dataset is nevertheless interesting. Appropriate econometric techniques can limit the consequences of random error.

Returning then to the question of whether financial access reduces poverty, we use the new access data to obtain a macro cross-country perspective on this issue.

Earlier work (using the CGAP data also described above) failed to find any significant cross-country correlation between the density of microfinance accounts and poverty rates (Honohan, 2004b). But given the extensive differences between the old data and the new composite series, it is worth repeating the experiment.

¹⁴ Even though this variable captures the degree to which the banking system intermediates funds to the private sector, and not the overall resources of the banking system

But first, as a precaution against getting carried away by correlations between variables of interest, it is worth looking at the extent to which our household access series is also correlated with other variables that may cause or be caused by it, or are, with access, jointly caused by some deeper variables.

In fact (Table 2) using any of the variants of the new data series presented in the previous section, we do find that access is correlated with the \$1 per day poverty headcount rate. This is true even of the microfinance-only data (referred to in the Appendix as the WSBI series – see regression 3.A). It is also true of the synthetic access percentages (3.E) or the main composite series (2.D). But access percentages are, as already shown by Figure 4, strongly correlated with per capita income,¹⁵ and since the latter is highly correlated with poverty rates, the more interesting question is whether access remains significant in a regression which also includes per capita income. In fact, when per capita income and other controls¹⁶ found to be significant in earlier work (see 2.A-C) are added to the specification, none of the access series retains significance (2.E-F; 3B-C; 3F-G).

There are several wide outliers in these regressions, and as a robustness check we re-estimated with two or three of these excluded (2H-N). Qualitatively the results are the same: access is significant on its own, but not when income and distribution variables are also included.

A similar exercise was conducted with the \$2 per day poverty headcount as the dependent variable. Interestingly, the same pattern holds, as shown by the regressions reported in Table 5. Financial access is correlated with the broader poverty definition but not when the effects of average income is controlled-for. Removal of outliers does not alter this picture.

¹⁵ In a regression of data on the summary access indicator for 144 countries, per capita income explains about 63 percent of cross country variation. After exclusion of 4 wide outliers (Hong Kong, Lebanon, Luxembourg and Macao) this jumps to over 73 percent. Apart from Luxembourg, the other three outliers should probably be omitted from most analyses with this data.

¹⁶ We include the mean income of the bottom 90 per cent, together with the percentage *share* of the top decile, instead of just the overall mean income, following Honohan (2004c)

The next aspect to check is whether the lack of significance may be due to other omitted variables. Table 4 shows the results of augmented regressions with the \$1 a day headcount as dependent variable. Four categories of additional variable were added. First, the depth of private banking credit (expressed as a percentage of GDP) and its companion, the inflation rate;¹⁷ second, measures of political and social institutional quality; third, population size; and fourth, sub-Saharan Africa dummies. Collinearity between these variables and the presence of several wide outliers mean that little beyond average income is significant when the full sample is used (Regressions 4A-G), though the sub-Saharan Africa (not including South Africa) is significant and positive when the institutional and population size variables are excluded.

Removing outliers (the note to regression 4B shows how wide these outliers are) reveals some more structure. In particular, even with average income included, (private) banking depth tends to be significant, with the sign implying that deeper systems have less poverty (Regressions 4H-P).¹⁸ This is consistent with the results reported in Honohan (2004a,b), despite the inclusion of the financial access variable, which remains insignificant. In other words, if development lowers poverty, it is in its depth dimension rather than the access dimension that this is evident in cross-country data.¹⁹

Interestingly, an interaction term between (bank credit) depth and access is significant and makes the access variable significant (Regressions 4Q-T). But the marginal effect of access (conditional on depth) is estimated in these equations to be positive only if the depth variable is well below its mean.

Finally, we look in Table 6 at the possible impact of financial access on inequality as measured by the Gini coefficient. Once again, when the access variable is included on its

¹⁷ Since all variables related to monetary depth are highly correlated across country with inflation (because agents economize on money balances when inflation is high), it is prudent to include inflation as a control variable if monetary depth is being used as a structural measure of financial development (Honohan, 2004a).

¹⁸ Regressions 4Y-AD show that the depth variable remains significant even if fewer of the outliers from regression 4B are excluded.

¹⁹ The institutional variables, when significant, tend to have a counterintuitive sign—better institutions meaning more poverty—but these coefficients are not robust.

own it is significant and has the expected negative sign (Regression 6A). However, when per capita income or a sub-Saharan Africa dummy (or both) are included, access is no longer significant (Regressions 6B-C). However, when banking depth is also included (an action which lowers the available list of countries on the data set employed to 74),²⁰ while depth is not significant, access becomes so (6D-E), whether or not the institutional and policy controls are also included (6F-G). The size of the estimated impact (for this restricted sample) is sizable but not unrealistic: an increase of ten percent in access is associated with a 0.6 percentage *point* lower Gini coefficient.

In the absence of plausible instruments, all of the reported regressions have used ordinary least squares rather than an instrumental variables estimator. This is not likely to be as serious a problem when the dependent variable is poverty count or inequality, as it would be if the equations were trying to explain income levels and growth.²¹

4. Concluding Remarks

For low-income countries, the relevant question for poor households is not how much financial assets they have, but whether they have access to financial intermediaries at all. We have drawn on and synthesized recent work by several authors using information provided by banks and micro-finance institutions in combination with household survey data to produce estimates of access percentages for some 160 countries. These estimates can be progressively refined as the results of a new wave of access surveys currently under way or planned become available.

The new access percentages are negatively correlated across countries with poverty headcount rates, whether at the \$1 a day or \$2 a day thresholds. But the correlation is not a robust one and loses significance in multiple regressions that include mean per capita income. At the same time, the more conventional measure of financial development,

²⁰ And this is the main reason for the significance—as is shown by Regression 6E.

²¹ Of course there could still be an endogeneity problem, for example, if both poverty and access were driven by a common unobserved factor. But what is absent here is the kind of automatic feedback from average income to financial depth that makes instrumenting essential in the causal analysis of finance and growth, for example.

namely banking (credit) depth, does retain significant explanatory power in this data. Thus the supposed anti-poverty potential of financial access remains econometrically elusive.

Even if it does not strongly help explain absolute poverty, financial access is negatively correlated with income inequality as measured by the Gini coefficient. This might be interpreted as implying that access to an account at a formal intermediary does more for those somewhat higher up the ladder than the \$2 a day poor.

However one reads the evidence on the impact of direct access of the poor to financial services, the findings of the paper reemphasize the importance of wider financial development, with its favorable impact both on economic growth and on the degree to which growth is pro-poor.

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Table 1: *Composite Measure of Access to Financial Services*

Albania	b	ALB	34	Georgia		GEO	15	Pakistan	b	PAK	12
Algeria		DZA	31	Germany	s	DEU	97	Panama		PAN	46
Angola		AGO	25	Ghana		GHA	16	Papua New Guinea	b	PNG	8
Antigua & Barbuda		ATG	48	Greece	s	GRC	83	Paraguay		PRY	30
Argentina	b	ARG	28	Grenada		GRD	37	Peru		PER	26
Armenia	s	ARM	9	Guatemala	s	GTM	32	Philippines		PHL	26
Austria	s	AUT	96	Guinea		GIN	20	Poland	s	POL	66
Azerbaijan		AZE	17	Guyana	s	GUY	14	Portugal	s	PRT	84
Bahamas, The		BHS	53	Haiti		HTI	15	Romania		ROM	23
Bangladesh		BGD	32	Honduras	B	HND	25	Russian Federation		RUS	69
Barbados		BRB	56	Hong Kong, Chn		HKG	[38]	Rwanda		RWA	23
Belarus		BLR	16	Hungary	S	HUN	66	Samoa		WSM	19
Belgium	s	BEL	97	India		IND	48	Saudi Arabia		SAU	62
Belize		BLZ	46	Indonesia		IDN	40	Sao Tome & Principe		STP	15
Benin		BEN	32	Iran, Isl. Rep.		IRN	31	Senegal		SEN	27
Bermuda		BMU	48	Iraq		IRQ	17	Seychelles		SYC	41
Bhutan		BTN	16	Ireland	s	IRL	88	Sierra Leone		SLE	13
Bolivia		BOL	30	Italy	s	ITA	75	Singapore	b	SGP	98
Bosnia & Herzeg.		BIH	17	Jamaica		JAM	59	Slovak Republic		SVK	83
Botswana		BWA	47	Jordan	b	JOR	37	Slovenia		SVN	97
Brazil	s	BRA	43	Kazakhstan		KAZ	48	Solomon Islands		SLB	15
Bulgaria	s	BGR	56	Kenya	s	KEN	10	South Africa		ZAF	46
Burkina Faso		BFA	26	Korea, Rep.		KOR	63	Spain	s	ESP	95
Burundi		BDI	17	Kyrgyz Republic		KGZ	1	Sri Lanka		LKA	59
Cambodia		KHM	20	Latvia		LVA	64	St. Kitts and Nevis		KNA	49
Cameroon		CMR	24	Lebanon	b	LBN	[79]	St. Lucia		LCA	40
Canada	s	CAN	96	Lesotho		LSO	17	St. Vincent & Gren.		VCT	45
Cape Verde		CPV	40	Liberia		LBR	11	Sudan		SDN	15
Cent African Rep.		CAF	19	Libya		LYB	27	Suriname		SUR	32
Chile		CHL	60	Lithuania	s	LTU	70	Swaziland		SWZ	35
China		CHN	42	Luxembourg	s	LUX	99	Sweden	s	SWE	99
Colombia	s	COL	41	Macao, China		MAC	[14]	Switzerland	b	CHE	88
Comoros		COM	20	Macedonia, FYR		MKD	20	Syrian A.R.		SYR	17
Congo, Rep.		COG	27	Madagascar		MDG	21	Tajikistan		TJK	16
Costa Rica		CRI	29	Malawi		MWI	21	Tanzania		TZA	5
Cote d'Ivoire		CIV	25	Malaysia	b	MYS	57	Thailand		THA	59
Croatia		HRV	42	Mali		MLI	22	Timor-Leste		TMP	13
Cuba		CUB	45	Malta	s	MLT	90	Togo		TGO	28
Cyprus	s	CYP	85	Mauritania		MRT	16	Trinidad & Tobago		TTO	53
Czech Republic	s	CZE	85	Mauritius	b	MUS	60	Tunisia		TUN	42
Denmark	s	DNK	99	Mexico	s	MEX	25	Turkey	b	TUR	49
Dominica		DMA	66	Moldova		MDA	13	Uganda		UGA	20
Dominican Rep.		DOM	29	Mongolia		MNG	25	Ukraine		UKR	24
Ecuador	s	ECU	35	Morocco		MAR	39	United Kingdom	s	GBR	91
Egypt		EGY	41	Mozambique		MOZ	12	United States	s	USA	91
El Salvador		SLV	26	Myanmar		MMR	19	Uruguay		URY	42
Eritrea		ERI	12	Namibia	s	NAM	28	Uzbekistan		UZB	16
Estonia	s	EST	86	Nepal		NPL	20	Venezuela	b	VEN	28
Ethiopia		ETH	14	Netherlands		NLD	100	Vietnam		VNM	29
Fiji	b	FJI	39	Nicaragua	s	NIC	5	West Bank & Gaza		WBG	14
Finland	s	FIN	99	Niger		NER	31	Yemen, Rep.		YEM	14
France	s	FRA	96	Nigeria		NGA	15	Yugoslavia, FR		YUG	21
Gabon		GAB	39	Norway	b	NOR	84	Zambia		ZMB	15
Gambia		GMB	21	Oman		OMN	33	Zimbabwe	b	ZWE	34

Note: 's' means household survey data used; 'b' means fitted data using bank deposit numbers and not WSBI numbers. [Square bracketed data are considered less reliable—see footnote 14]. This is Mark IIIb version of the data series; apart from Canada, it is the version used in the regressions of Tables 2-6: As more refined information on specific countries is obtained, it is envisaged that this series will be updated.

Source: Author's calculations based on Beck et al. (2005), Christen et al (2004), Claessens (2006), European Commission (2005), Peachey and Roe (2006) and subsequent revisions. For definitions and method see Section 2.

Table 2. *Poverty and Financial Access*

This table shows regressions relating the \$1 per day poverty percentage to financial access percentages across countries

Equation:	2.A		2.B		2.C		2.D		2.E		2.F		2.G	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	173.6	**11.6	170.6	**12.8	137.8	**8.5	65.6	**6.1	175.5	**11.5	172.2	**12.7	139.9	**8.4
GNI per cap (log)	-18.8	**10.4							-19.7	**8.4				
GNI per cap lower 90% (log)			-19.2	**11.4	-17.5	**10.4					-20.5	**9.6	-18.3	**8.5
Share of top 10%					0.574	**3.3							0.555	**3.1
Access (log)							-13.7	**4.3	1.6	0.5	2.6	1.0	1.5	0.6
Which measure?							Comp		Comp		Comp		Comp	
Outliers omitted?		None		None		None		None		None		None		None
R-squared / NOBS	0.546	91	0.598	89	0.643	89	0.175	89	0.549	89	0.603	87	0.644	87
Adjusted R-squared	0.541		0.593		0.634		0.166		0.538		0.593		0.631	
S.E. of regression	15.2		14.2		13.5		20.7		15.4		14.4		13.7	
Log likelihood	-375.7		-361.5		-356.2		-395.0		-368.1		-353.7		-348.9	

Equation:	2.H		2.J		2.K		2.L		2.M		2.N		2.P	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	57.0	**5.4	167.9	**12.6	135.1	**9.4	57.0	**5.4	160.6	**12.4	130.3	**9.5		
GNI per cap (log)			-20.3	**9.9					-19.5	**9.9				
GNI per cap lower 90% (log)					-18.6	**10.1					-18.0	**10.0		
Share of top 10%					0.476	**3.1					0.444	**3.1		
Access (log)	-11.5	**3.7	5.0	1.9	4.2	1.8	-11.5	**3.7	5.0	1.9	4.2	1.9		
Which measure?	Comp		Comp		Comp		Comp		Comp		Comp			
Outliers omitted?	139,192	NIC,UGA	139,192	NIC,UGA	139,192	NIC,UGA	62,139,192	ETH, NIC,UGA	62,139,192	ETH, NIC,UGA	62,139,192	ETH, NIC,UGA		
R-squared / NOBS	0.137	87	0.604	87	0.696	85	0.137	87	0.598	86	0.689	84		
Adjusted R-squared	0.127		0.594		0.685		0.127		0.588		0.677			
S.E. of regression	19.5		13.3		11.5		19.5		12.7		11.1			
Log likelihood	-380.7		-346.8		-326.5		-380.7		-339.1		-319.0			

** and * indicate significance at the 1% and 5% levels, respectively.

Cross section: all available except as shown.

WSBI is the data in Peachey and Roe (2006) as revised for this paper; *Synth(etic)* is the predicted share using the estimated regression J in Table A1;

Comp(osite) is based on household survey data where available, otherwise *Synth* (see Section 2 – Mark IIIa of the composite series was used here).

Source for poverty (from last available survey before 2004) and GNI (1999, measured at PPP): WDI.

Table 3. *Poverty and Financial Access – alternative access definitions*

This table shows regressions relating the **\$1** per day poverty percentage to financial access percentages across countries

Equation:	3.A		3.B		3.C		3.D		3.E		3.F		3.G	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	31.9	**6.9	171.8	**14.0	137.9	**8.1			97.0	**6.3	171.6	**12.0	139.8	**8.3
GNI per cap (log)														
GNI per cap lower 90% (log)			-19.4	**10.3	-17.4	**9.2					-19.4	**8.9	-17.2	**7.9
Share of top 10%					0.58	**3.2							0.58	**3.2
Access (log)	-4.7	**2.9	-0.03	-0.2	-0.4	0.3			-23.0	**5.0	0.2	0.0	-1.4	0.3
Which measure?	WSBI		WSBI		WSBI				Synth		Synth		Synth	
R-squared / NOBS	0.088	88	0.595	86	0.640	86			0.227	86	0.595	86	0.640	86
Adjusted R-squared	0.077		0.586		0.627				0.218		0.586		0.627	
S.E. of regression	21.8		14.5		13.8				20.1		14.5		13.8	
Log likelihood	-395.1		-350.5		-345.5				-387.8		-350.6		-345.5	

** and * indicate significance at the 1% and 5% levels, respectively.

Cross section: all available countries.

WSBI is the data in Peachey and Roe (2006) as revised for this paper; *Synth(etic)* is the predicted share using the estimated regression J in Table A1; *Comp(osite)* is based on household survey data where available, otherwise *Synth* (see Section 2 – Mark IIIa of the composite series was used here).

Source for poverty (from last available survey before 2004) and GNI (1999, measured at PPP): WDI.

Table 4. *Poverty and Financial Access – additional variables*

This table shows regressions relating the \$1 per day poverty percentage to financial access percentages across countries
(a) Full sample

Equation:	4.A		4.B		4.C		4.D		4.E		4.F		4.G	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	146.6	**7.8	146.6	**7.8	169.0	**7.2	141.7	**4.8	130.3	**4.1	133.6	**3.2	110.6	**4.6
GNI per cap lower 90% (log)	-16.5	**4.9	-16.5	**4.9	-18.1	**5.0	-15.4	**3.9	-14.3	**3.4	-14.3	**3.4	-12.9	**3.6
Share of top 10%	0.609	**3.0	0.609	**3.0	0.509	*2.4	0.419	1.9	0.428	2.0	0.427	2.0	0.46	*2.3
Access (log)	-0.8	0.2	0.79	0.2	-0.28	0.1	-0.49	0.1	-0.50	0.1	-0.37	0.1	-1.46	0.3
Private credit (log % of GDP)	-3.4	1.2	-3.43	1.2	-3.26	1.1	-1.44	0.5	-0.72	0.2	-0.62	0.2	-0.90	0.3
Inflation (log)	-1.2	0.6	-1.25	0.6	-0.484	0.2	0.22	0.1	-0.34	0.2	-0.38	0.2	-0.08	0.0
Institutions (KKZ index)					3.98	0.9	2.61	0.6	1.96	0.4	1.73	0.3		
Institutions (Freedom house bank)					-3.20	1.2	-3.21	1.2	-3.52	1.3	-3.68	1.2		
Population (log)											-0.18	0.1		
SS Africa dummy							8.58	1.5						
SS Africa not ZAF dummy									11.00	1.8	10.88	1.7	13.40	2.3
Which measure?	Comp		Comp		Comp		Comp		Comp		Comp		Comp	
Outliers omitted?		None		None		None		None		None		None		None
R-squared / NOBS	0.651	71	0.651	71	0.669	69	0.681	69	0.685	69	0.685	69	0.678	71
Adjusted R-squared	0.624		0.624		0.631		0.638		0.643		0.637		0.648	
S.E. of regression	14.5		14.5		14.2		14.0		13.9		14.1		14.0	
Log likelihood	-287.4		-287.4		-276.6		-275.3		-274.9		-274.9		-284.5	

Note: For Equation 4B, the largest residuals are: ETH 25.3, MNG 26.6, NIC 41.3, TZA 38.0, UGA 45.3, YEM 29.6.

Table 4. *Poverty and Financial Access – additional variables* [Continued]

(b) Removing outliers

Equation:	4.H		4.J		4.K		4.L		4.M		4.N		4.P	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	162.1	**14.2	187.5	**10.2	187.1	**10.0	164.7	**7.9	158.5	**6.1	142.4	**4.3	136.1	**7.2
GNI per cap lower 90% (log)	-16.5	**7.6	-20.3	**8.0	-20.2	**7.8	-18.0	**6.2	-17.4	**5.6	-16.9	**5.3	-15.5	**5.8
Share of top 10%	0.609	**2.9	0.355	*2.4	0.358	*2.4	0.290	1.9	0.307	*2.0	0.300	2.0	0.339	*2.3
Access (log)	3.67	1.0	2.31	0.7	2.98	0.8	3.22	0.9	3.32	0.9	2.66	0.7	3.48	0.3
Private credit (log % of GDP)	-6.67	-3.2	-7.46	**3.6	-6.78	**3.0	-5.56	*2.4	-5.18	*2.1	-5.86	*2.3	-5.14	*2.4
Inflation (log)	-1.86	-1.3	-1.26	0.4	-1.02	0.7	-0.75	0.5	-0.76	0.5	-1.07	0.7	-1.38	1.0
Institutions (KKZ index)			6.96	*2.1	7.07	*2.1	5.56	1.6	5.09	1.4	6.26	1.6		
Institutions (Freedom house bank)					-1.75	0.9	-1.79	0.9	-2.02	1.1	-1.19	0.5		
Population (log)											0.90	0.8		
SS Africa dummy							6.45	1.5						
SS Africa not ZAF dummy									7.30	1.6	8.29	1.7	8.96	*2.0
Which measure?	Comp		Comp		Comp		Comp		Comp		Comp		Comp	
Outliers omitted?	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM
R-squared / NOBS	0.791	65	0.806	65	0.793	64	0.802	64	0.802	64	0.804	64	0.805	65
Adjusted R-squared	0.774		0.786		0.767		0.773		0.773		0.772		0.785	
S.E. of regression	9.9		9.6		9.7		9.6		9.6		9.6		9.6	
Log likelihood	-238.0		-235.7		-231.8		-230.5		-230.4		-230.1		-235.8	

Table 4. *Poverty and Financial Access – additional variables* [Continued]

(c) Interaction term: credit depth x access

Equation:	4.Q		4.R		4.S		4.T		4.U		4.V		4.W	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	265.3	**6.8	271.1	**7.0	234.0	**5.5	245.6	**8.5						
GNI per cap lower 90% (log)	-18.2	**8.0	-19.8	**8.1	-16.1	**6.3	-17.7	**6.0						
Share of top 10%	0.430	*3.1	0.376	*2.7	0.361	*2.6	0.338	*2.4						
Access (log)	-27.1	*2.3	-24.3	*2.1	-24.0	*2.1	-22.6	2.0						
Private credit (log % of GDP)	-41.1	**3.3	-37.3	**3.0	-36.3	**2.9	-34.6	**2.8						
Access x private credit (log)	9.94	**2.8	8.69	*2.4	8.90	*2.5	8.22	*2.3						
Inflation (log)	-1.19	0.9	-0.83	0.6	-0.89	0.6	-0.69	0.5						
Institutions (KKZ index)			5.16	1.6			3.79	1.1						
SS Africa not ZAF dummy					7.01	1.6	5.38	1.2						
Which measure?	Comp		Comp		Comp		Comp							
Outliers omitted?	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM						
R-squared / NOBS	0.817	65	0.824	65	0.825	65	0.829	65						
Adjusted R-squared	0.798		0.803		0.804		0.804							
S.E. of regression	9.3		9.2		9.2		9.2							
Log likelihood	-233.8		232.4		232.3		231.6							

Note to panel (c): sample mean of log(access) is 3.38; sample mean of log(private credit) is 2.98.

Table 4. *Poverty and Financial Access – additional variables* [Continued]
(d) Varying samples

Equation:	4.X		4.Y		4.Z		4.AA		4.AB		4.AC		4.AD	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	187.1	**10.3	174.5	**9.2	184.1	**9.5	168.1	**8.5	145.9	**7.6	143.5	**6.7	157.9	**7.6
GNI per cap lower 90% (log)	-20.9	**10.0	-19.9	**9.0	-20.9	**9.1	-19.9	**8.3	-19.6	**7.7	-17.3	**6.3	-20.4	**7.3
Share of top 10%	0.349	*2.4	0.366	*2.4	0.370	*2.3	0.461	**2.7	0.548	**3.1	0.629	**3.3	0.496	**2.6
Access (log)	2.13	0.6	2.22	0.6	1.55	0.4	2.25	0.6	6.05	1.6	-0.71	0.2	6.19	1.5
Private credit (log % of GDP)	-6.64	**3.7	-5.63	**3.0	-5.44	**2.8	-4.68	*2.3	-3.73	1.7	-1.83	0.8	-5.01	*2.1
Institutions (KKZ index)	7.22	*2.3	5.05	1.5	6.06	1.8	5.19	1.4	1.96	0.5	2.18	0.5	3.09	0.8
Which measure?	Comp		Comp		Comp		Comp		Comp		Comp		Comp	
Outliers omitted?	62,129,139, 184,192,204	ETH,MNG, NIC,TZA, UGA,YEM	62,139,184, 192,204	ETH,NIC, TZA, UGA,YEM	139,184,192, ,204	NIC, TZA, UGA,YEM	139,184,192	NIC, TZA, UGA	139,192	NIC, UGA	139,192	NIC, UGA	192	UGA
R-squared / NOBS	0.805	66	0.773	67	0.779	68	0.745	69	0.712	70	0.684	71	0.684	71
Adjusted R-squared	0.789		0.754		0.761		0.725		0.689		0.660		0.660	
S.E. of regression	9.5		10.2		10.7		11.4		12.0		13.2		13.2	
Log likelihood	-239.4		247.6		254.3		262.4		270.1		280.7		280.7	

** and * indicate significance at the 1% and 5% levels, respectively.

Cross section: all available countries, except as shown.

WSBI is the data in Peachey and Roe (2006) as revised for this paper; *Synth(etic)* is the predicted share using the estimated regression J in Table A1;

Comp(osite) is based on household survey data where available, otherwise *Synth* (see Section 2 – Mark IIIa of the composite series was used here).

Source for poverty (from last available survey before 2004) and GNI (1999, measured at PPP): WDI; source for inflation (geometric average of CPI 1990-2000) and private credit (1999): IFS; Source for Institutions Indexes: kkz: Kaufman et al. Governance Matters III, average of the six indicators for 1998; bfree Heritage Foundation average of data for 1995-99, bfree is the banking freedom index as published subtracted from 6.

Table 5. *Poverty and Financial Access*

This table shows regressions relating the \$2 per day poverty percentage to financial access percentages across countries

Equation:	5.A		5.B		5.C		5.D		5.E		5.F		5.G	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	273.6	**16.7	264.4	**17.6	248.1	**13.0	114.4	**8.3	274.7	**16.0	264.4	**17.3	247.2	**12.7
GNI per cap (log)	-28.4	**13.9							-28.5	**10.9				
GNI per cap lower 90% (log)			-28.3	**14.9	-27.5	**13.8					-28.7	**11.9	-27.2	**10.9
Share of top 10%					0.285	**1.4							0.295	1.4
Access (log)							21.8	**5.4	0.3	0.1	0.6	0.2	0.0	0.0
Which measure?							Comp		Comp		Comp		Comp	
Outliers omitted?		None		None		None		None		None		None		None
R-squared / NOBS	0.685	91	0.718	89	0.724	89	0.249	89	0.686	89	0.720	87	0.726	87
Adjusted R-squared	0.682		0.715		0.718		0.240		0.678		0.713		0.716	
S.E. of regression	17.0		16.0		15.9		26.5		17.2		16.2		16.1	
Log likelihood	-386.1		-372.1		-371.1		-416.8		-378.0		-364.0		-362.9	

Equation:	5.H		5.J		5.K		5.L		5.M		5.N		5.P	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	114.8	**8.4	278.1	**17.2	267.5	**19.0	249.9	**13.7						
GNI per cap (log)			-29.2	**11.8										
GNI per cap lower 90% (log)					-28.7	**13.2	-27.2	**11.9						
Share of top 10%							0.295	1.5						
Access (log)	22.3	**5.5	0.4	0.1	0.6	0.3	0.0	0.1						
Which measure?	Comp		Comp		Comp		Comp							
Outliers omitted?	86,127, 192,204	IND.MDA, UGA,YEM	86,127, 192,204	IND.MDA, UGA,YEM	86,127, 192,204	IND.MDA, UGA,YEM	86,127, 192,204	IND.MDA, UGA,YEM						
R-squared / NOBS	0.269	89	0.731	85	0.769	83	0.775	83						
Adjusted R-squared	0.260		0.722		0.763		0.767							
S.E. of regression	25.8		15.8		14.5		14.4							
Log likelihood	-395.8		-353.4		-338.0		-336.8							

** and * indicate significance at the 1% and 5% levels, respectively.

Cross section: all available countries except as shown: Note GNI per cap is measured at PPP ;

WSBI is the data in Peachey and Roe (2006) as revised for this paper; *Synth(etic)* is the predicted share using the estimated regression J in Table A1;

Comp(osite) is based on household survey data where available, otherwise *Synth* (see Section 2 – Mark IIIa of the composite series was used here).

Source for poverty (from last available survey before 2004) and GNI (1999, measured at PPP): WDI.

Table 6. *Poverty and Financial Access*

This table shows regressions relating the **Gini coefficient** to financial access percentages across countries

Equation:	6.A		6.B		6.C		6.D		6.E		6.F		6.G	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	51.7	**11.0	68.9	**8.5	50.7	**4.9	19.4	1.4	49.3	**4.4	17.7	0.9	20.4	0.8
GNI per cap (log)			-3.49	**2.6	-1.28	0.8	4.20	1.9	1.84	0.9	3.54	1.4	3.34	1.3
Access (log)	-3.15	*2.4	0.42	0.2	-0.25	0.1	-6.21	*2.2	-6.17	*2.1	-6.21	*2.2	-5.96	*2.0
Private credit (log % of GDP)							2.48	1.4			3.36	1.8	3.62	1.8
Inflation (log)							0.04	0.0			0.70	0.5	0.74	0.5
Institutions (KKZ index)											0.08	0.0	-0.21	0.1
Institutions (Freedom house bank)											0.78	0.4	0.65	0.3
Population (log)													-0.14	0.1
SS Africa dummy					7.76	**2.7	10.25	**3.3			10.25	**2.9	9.56	**2.8
Which measure?	Comp		Comp		Comp		Comp		Comp		Comp		Comp	
Outliers omitted?		None		None		None		None		See note		None		None
R-squared / NOBS	0.049	112	0.104	112	0.162	112	0.223	74	0.073	74	0.221	72	0.220	72
Adjusted R-squared	0.040		0.087		0.138		0.166		0.047		0.136		0.119	
S.E. of regression	10.6		10.3		10.0		9.5		10.1		9.5		9.6	
Log likelihood	-422.4		-419.1		-415.4		-268.2		-274.7		-260.0		-256.6	

** and * indicate significance at the 1% and 5% levels, respectively.

Cross section: all available countries: Note GNI per cap is measured at PPP;

WSBI is the data in Peachey and Roe (2006) as revised for this paper; *Synth(etic)* is the predicted share using the estimated regression J in Table A1;

Comp(osite) is based on household survey data where available, otherwise *Synth* (see Section 2 – Mark IIIa of the composite series was used here).

Source for inequality (from last available survey before 2004) and GNI (1999, measured at PPP); WDI.

NB: The sample for equation 6.E was the set of countries for which all the data for regression 6D was available. There were no large outliers in 6D-G.

Table 7: *Correlations between variables used in the regressions*

	Access	Pov1	Pov2	Gini	GNI pc	Top decile	Pvt Credit	Infl	KKZ	B Free
Access (log)	1.000									
Poverty headcount % (\$1 per day)	-0.612	1.000								
Poverty headcount % (\$2 per day)	-0.691	0.899	1.000							
Gini Coefficient	-0.256	0.362	0.249	1.000						
GNI per cap (log)	0.731	-0.749	-0.838	-0.119	1.000					
Share of top 10%	-0.259	0.380	0.283	0.947	-0.114	1.000				
Private Credit (log % of GDP)	0.313	-0.313	-0.333	0.103	0.377	0.103	1.000			
Inflation (log)	-0.033	-0.127	-0.135	-0.059	0.175	-0.094	-0.437	1.000		
Institutions (KKZ measure)	0.510	-0.395	-0.554	0.004	0.599	0.015	0.444	-0.147	1.000	
Institutions (Freedom house bank)	0.434	-0.385	-0.474	-0.035	0.428	-0.001	0.272	-0.069	0.364	1.000
Population (log)	-0.101	0.079	0.219	-0.078	-0.186	-0.087	0.013	0.099	-0.412	-0.441

Based on largest common sample.

Table A1: *Relating Survey-based Access Percentages and Information on Account Numbers*

Regressions A-F in this table relate survey-based estimates of the percentage of households who have bank accounts (*Survsave*) to estimates of the number of bank accounts per head of population, average bank deposit size, and the number of accounts at “alternative” financial intermediaries per head of population. Regressions G-K repeat this substituting fitted values for the first two explanatory variables from Regressions L and M. Regression L relates the number of bank accounts per head of population to the number of accounts at “alternative” financial intermediaries. Regression M relates average bank deposit size to GDP per capita.

Explanatory var.	Equation: A1.A		A1.B		A1.C		A1.D		A1.E		A1.F	
	Dep. var.	survsave	survsave	survsave	survsave	survsave	survsave	survsave	survsave	survsave	survsave	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	-115.0	**5.6	186.1	**9.5	-63.0	1.0	-60.5	0.9	14.6	**3.2	8.17	1.7
Log (Bank accs per pop)	25.2	**8.1	18.8	**8.0	11.8	**2.9	11.5	2.1			0.0190	**4.9
Log (Average deposit size)			14.0	**4.9	2.4	0.4	2.2	0.3			0.00362	**3.5
Alternative accs per pop							0.017	0.0	0.701	**3.1		
Omitted observation					Adv		Adv		Adv			
R-squared / NOBS	0.814	17	0.931	17	0.601	10	0.601	10	0.315	23	0.895	17
Adjusted R-squared	0.801		0.921		.486		0.401		0.282		0.880	
S.E. of regression	15.8		10.0		9.5		10.2		14.1		12.3	
Log likelihood	-70.0		-61.5		-34.9		-34.9		-92.5		-65.1	

** and * indicate significance at the 1% and 5% levels, respectively.

NB: regression 1F uses the *levels* rather than the logs of {Bank accs per pop} and {Avg deposit size}

Omitted observations: regressions C-E omit advanced economies.

Table A1 (Continued)

Explanatory var.	Equation: A1.G		A1.H		A1.J		A1.K		A1.L		A1.M	
	Dep. var.	survsave	survsave	survsave	survsave	survsave	survsave	Depaccs	Depsize	Depaccs	Depsize	
	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat	Coeff.	t-Stat
Constant	-115.9	**6.9	-121.9	**8.3	-188.2	**9.5	-151.0	2.0	156.7	*2.5	1356	*2.8
Log (Bank accs per pop-synthetic)	25.2	**9.5	26.4	**11.2	18.2	**7.3	15.4	*2.5				
Log (Avg deposit size-synthetic)					14.8	**4.7	11.7	1.6				
Alternative accs per pop							0.131	0.4	12.9	**5.9		
GDP per cap											0.280	**9.4
Omitted observation			ROM						ROM			
R-squared / NOBS	0.761	30	0.823	29	0.869	30	0.485	23	0.762	13	0.822	21
Adjusted R-squared	0.753		0.817		0.859		0.403		0.740		0.813	
S.E. of regression	15.2		13.2		11.5		12.9		178.3		1735	
Log likelihood	-123.2		-115.0		-114.2		-89.2		-84.7		-185.4	

** and * indicate significance at the 1% and 5% levels, respectively.

The synthetic explanatory variables are the fitted values from equations 1L and 1M

Omitted observations: regressions H and L omit the outlier Romania

(source:extrapolation2.wf1. vars depaccs, deptime, peach3, deptime, deptime)

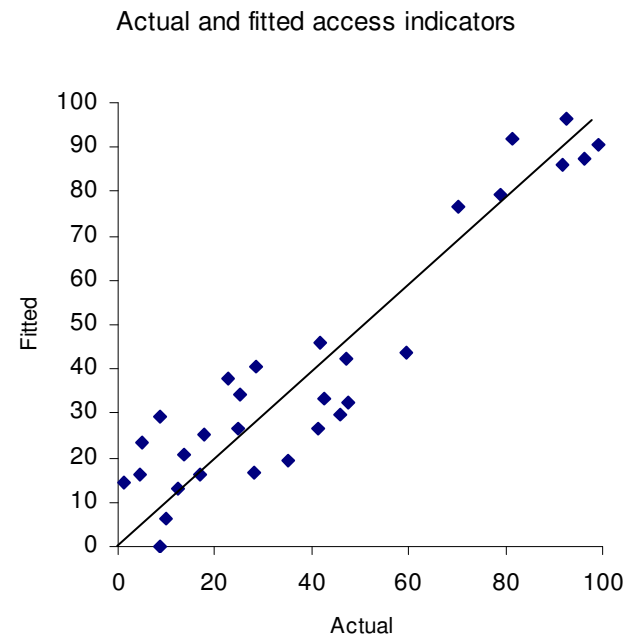
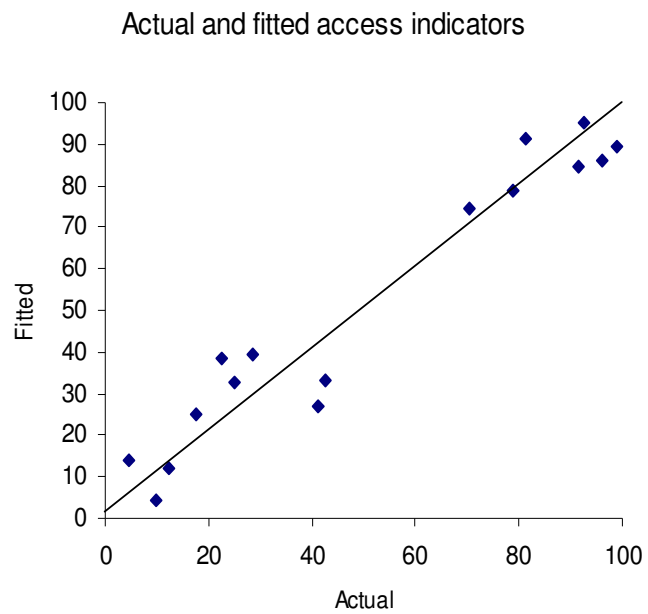


Figure 1: *Fit of the Equations Linking (a) Actual and (b) Synthetic Bank Accounts-based Information with Household-Survey Based Access Data* (Based on Regressions 1C and 1J in Table A1)
 :new access indicators.doc, and from extrapolating...xls

Developing country access to finance - deciles

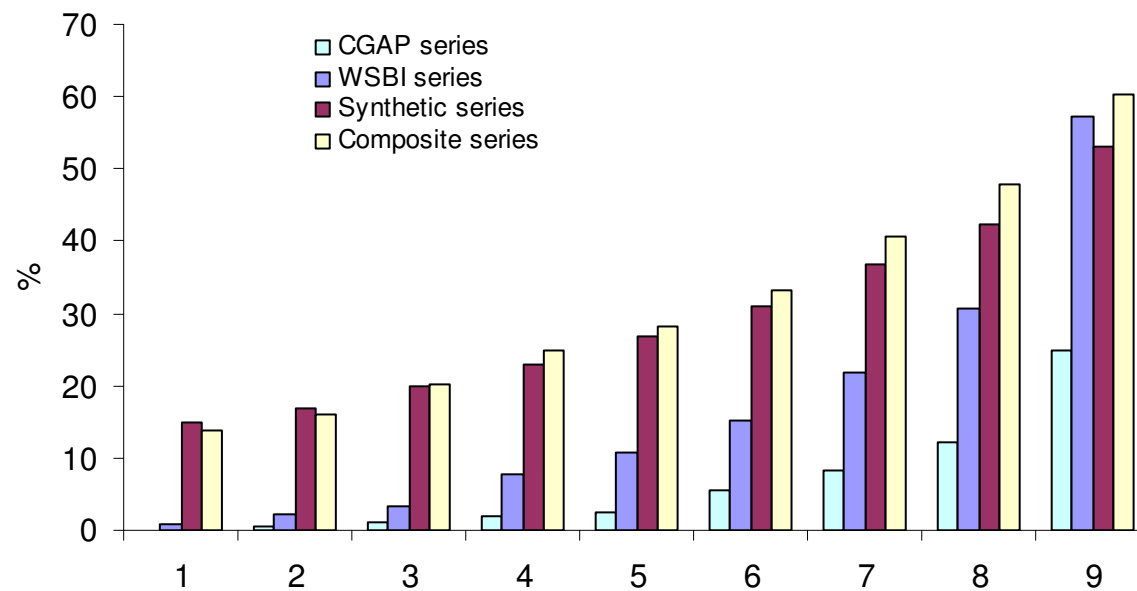


Figure 2: *Access to Finance, Estimated Deciles of Country Data*

The four series shown are: (i) based on the CGAP data for ‘alternative’ financial intermediaries; (ii) based on the expanded WSBI data including additional savings banks; (iii) the *Synthetic* series based on regression J in Table 1; (iv) the *Composite* series which substitutes actual household survey data for the synthetic series where available.

Example: Seventy percent of 138 developing countries in the database have at least 41.2 accounts per 100 adult population according to the *Composite* series.

Source: Author’s calculations based on Regression J table A1; underlying data drawn from: Beck et al, (2005) (Banking); Christen et al. (2004) (CGAP data); Claessens (2006), European Commission (2005) (Household Survey); Peachey and Roe (2006) (WSBI data).

New PH series...mark IIIA.xls

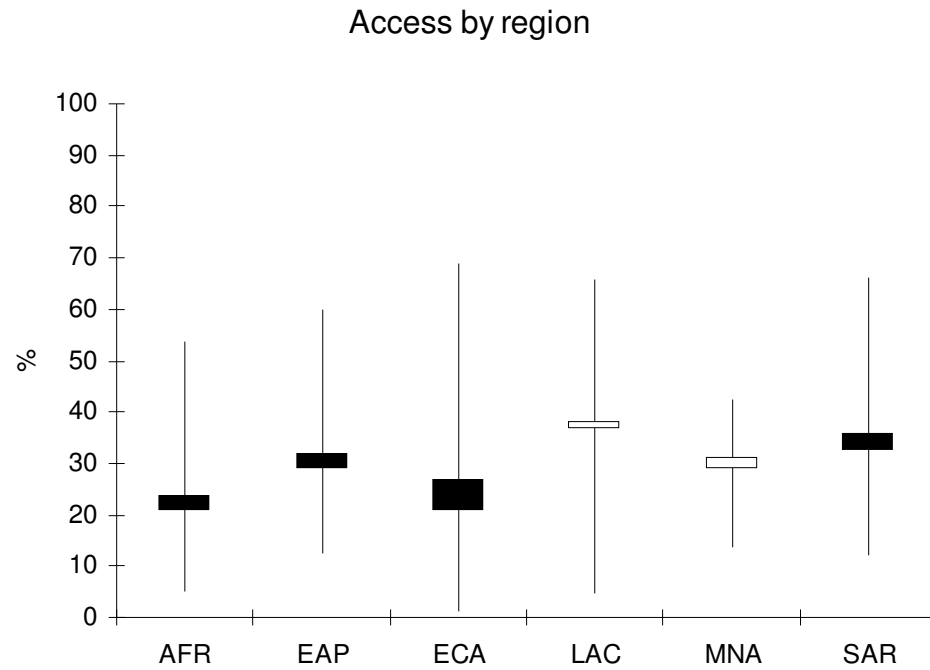


Figure 3: *Access to Finance by Country, Regional Extremes, Medians and Means (Composite Series)*
 Percentage of adult population with access to an account. Shows mean, median, max and min values for countries in each region
 The median is higher than the mean LAC and MNA, mean is higher than median elsewhere. ECA excludes EU member states.
 Source: as for Figure 2.

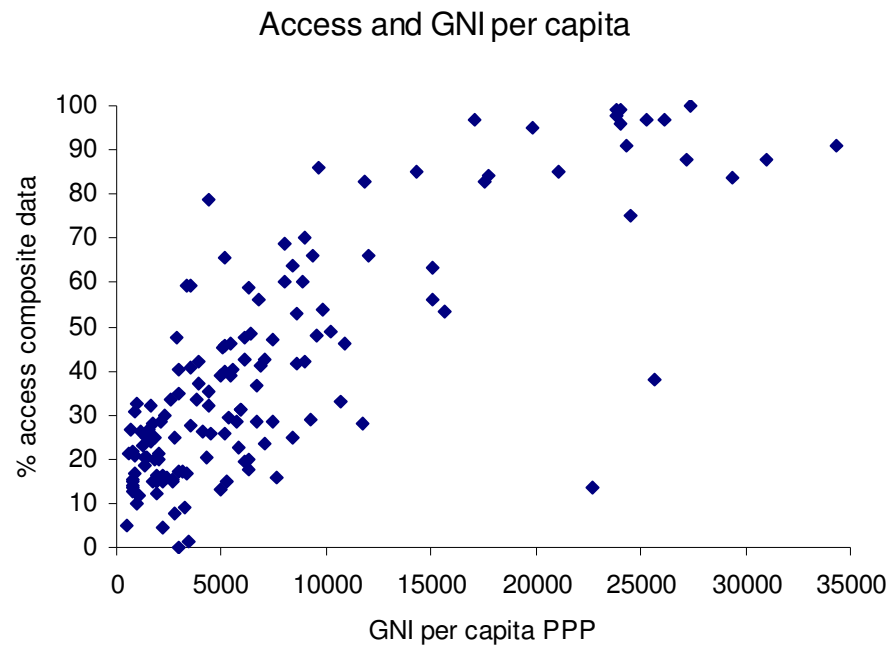


Figure 4: *Access and per capita Income – 144 Countries.*

This uses the composite access indicator – for definition see Section 2. GNI per capita data from WDI

Note: the two outliers on the lower right hand side are Hong Kong and Macao, China

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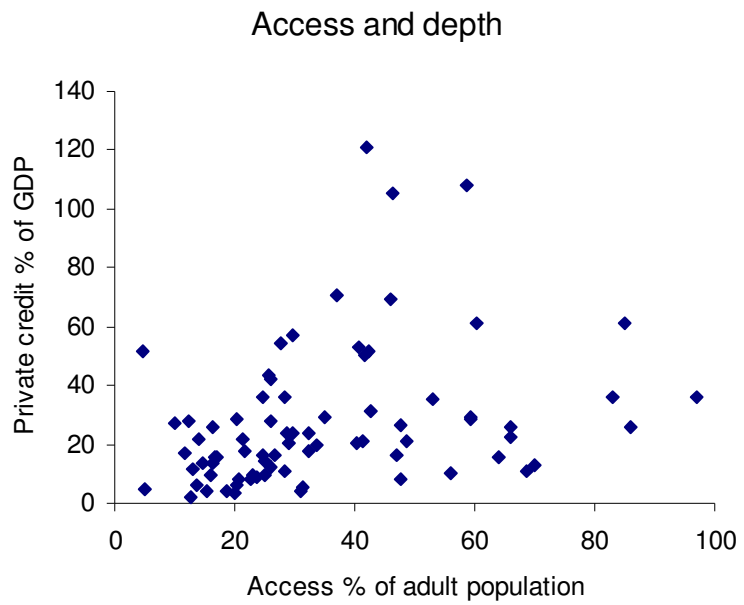
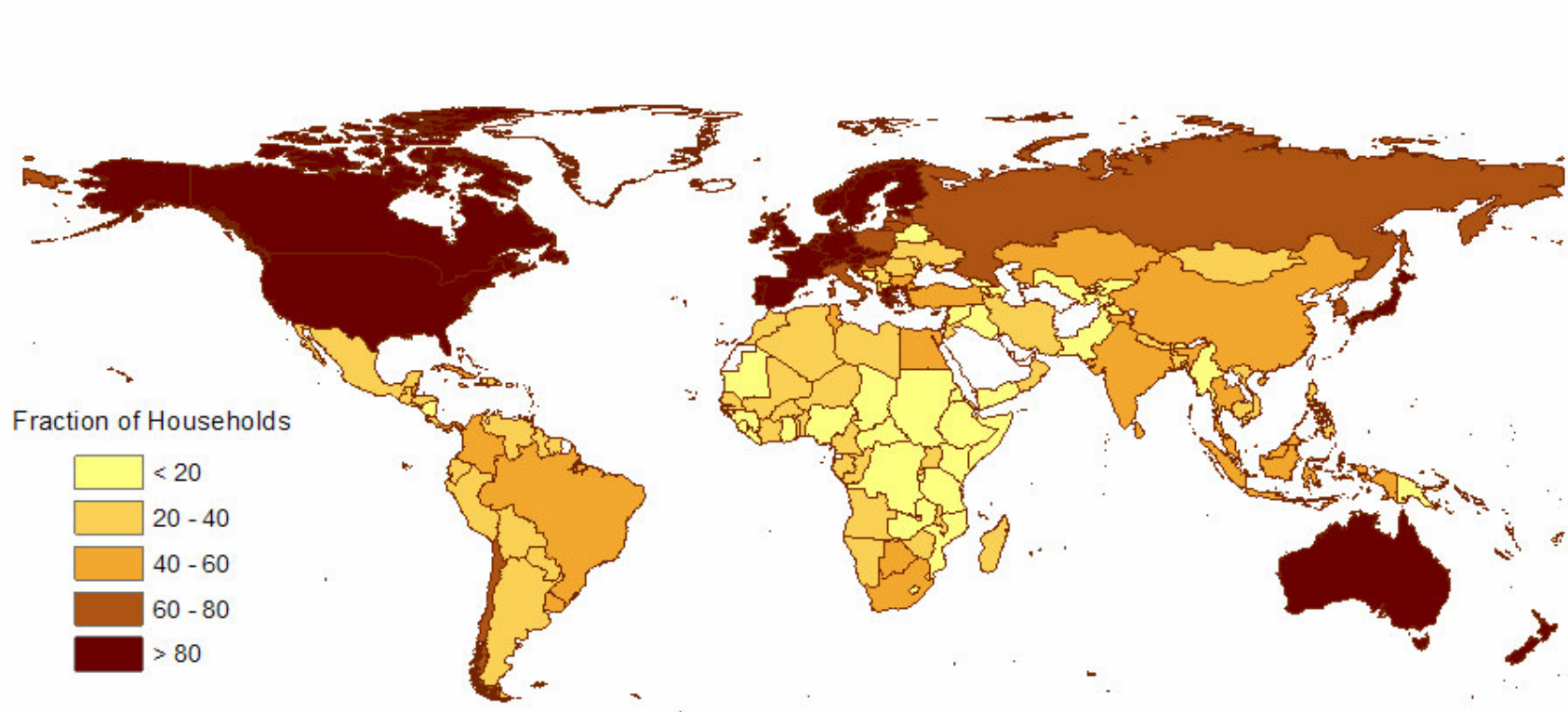


Figure 5: *Access and Banking Depth (Credit to Private Sector as % GDP)*

This uses the composite access indicator – for definition see Section 2.

Credit data from World Bank Financial Structure Database.

Access and depth chart.xls



Map 1: *Composite Measure of Access to Financial Services*

For definition see Table 1. The map includes eight countries not listed in Table 1 by assuming that AUS, ISL and NZL are in the highest category; COD (formerly ZAR), GNB, TCD, MRT and SOM in the lowest category.

Appendix: Revisions to the underlying CGAP and WSBI databases.

The basic data sources for individual institutions (CGAP and WSBI) were scrutinized for any needed revisions. Two particular issues arose. First, the rather high imputed account numbers assigned by WSBI for member banks with relatively high balance sheet aggregates in poor countries. Second, some hitherto unnoticed duplication of a handful of relatively large MFIs in the CGAP database.

1. WSBI imputed account numbers

Nine individual WSBI members for which imputed account numbers (using the formula:

$$\{\text{account numbers}\} = 0.24 * \{\text{total assets}\} / \{\text{gdp per capita}\}$$

amounted to more than 10 per cent of national adult population were separately scrutinized with the following results and action.

Angola: BPC. WSBI estimate is about a quarter of adult population. This bank is the largest state-owned bank but is now a full service commercial bank. It has the largest branch network and deposit share with about a quarter of the market (Source: BPC website). *Action:* revised the estimate of deposit numbers down to 10 per cent of the adult population.

Bolivia: UNIVIV. The WSBI estimate is for 1.96 million accounts or almost 40 per cent of the adult population. UNIVIV is the association of building societies (mutual mortgage lenders). According to the review of Bolivian microfinance on www.asofinbolivia.com, the total number of clients at mutuals in Bolivia at 2005 was 24,000 (from a total financial sector clientele of 672,000). *Action:* Reduce to 24,000.

Cape Verde: Caixa Economico. WSBI estimate is 200,000 or about three-quarters of the total population. This is the second largest bank in CPV and has a retail focus. About three-quarters of its deposits come from individuals, but almost 40% of these (by value) are from nonresident emigrants. Also GNDI in CPV is about 30% higher than GDP because of remittances. *Action:* Reduce the 89 per cent figure for savings banks in CPV to 36 per cent ($=79 * 0.6 / 1.3$)

Cuba: BPA. WSBI estimate is almost 6 million or 65 %. *Action:* None (This country does not enter the regression analyses).

Czech Republic. CSOB. WSBI estimate is 1.8 million. This bank claims 3.2 million customers in Czech and Slovak combined excluding the postal savings customers (bank website). *Action:* None.

Mali. Banque de l'Habitat. WSBI estimate is for 790,000 accounts or 13 per cent of the population. However, local experts confirm that this bank has far fewer than 100,000 retail accounts. *Action:* Change to 1 per cent of adult population.

Malta. Bank of Valletta. WSBI estimate is 1.3 million or more than 4 times the adult population. This appears to be based on an erroneous calculation. Revised estimate based on the WSBI imputation formula gives 103,000 or 36% of adult population. Also, this bank is a full service bank not just a savings bank. *Action:* Reduce the estimate of account numbers to 25% of adult population. (Household survey data supersedes use of the account data for this country in the current version of the database).

Mongolia. Savings Bank. WSBI estimate is 300,000. The 2005 call for privatization tenders gives the number of accounts at 218,000. *Action:* change to 218,000

Morocco. CDG. This institution's website explains that it is a wholesaler. *Action:* Delete this bank.

Panama. Caja de Ahorro. WSBI estimate is 680,000 or 37 per cent of the adult population. This is still a retail oriented bank, known as “Panama’s family bank”. *Action:* None

Romania. Banc Post. WSBI estimate is 13 per cent of the adult population. *Action:* None.

2. Duplicate institutions in CGAP database.

Large institutions in this database (more than 100,000 accounts) were scrutinized for possible double-counting of institutions (using different names). This problem was encountered and corrected in: Burkina Faso (RCPB), Madagascar (Caisse d’Epargne), Niger (MMD), Senegal (CNCAS), Sri Lanka (TCCs and CRBs), Vietnam (PCF).