

Economic Impacts of Payment Reporting Participation in Latin America



A Center for Competitive Credit White Paper

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May 2007



Acknowledgements

We are grateful to DataCreidito for access to anonymized Columbian credit files as well as to TransUnion LLC for their analytical expertise and use of the ACIERTA credit scoring model. In particular, at TransUnion we would like to thank Maria Olga Rehbein, Andres Perez, Abel Puritica, and Marcela Forero. In addition, we would like to thank the dozens of others who contributed useful feedback as earlier versions of this work were presented. In particular, we thank Margaret Miller of the World Bank for her comments.

While the insights offered by these parties were useful, the contents of this report and the opinions expressed therein are solely those of the authors.

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Executive Summary

Across economies in which positive and negative payment information are reported to private credit bureaus, we witness wide differences in participation rates. How do these differences impact lending and loan performance? In this study we use cross-national aggregate data from 65 countries and individual-level credit file data from two Latin American nations, Columbia and Costa Rica, to explore and attempt to quantify the economic and social benefits derived from increased participation in full-file private credit bureaus. The key findings are as follows:

- **Evidence from a cross-national comparison indicates that greater participation by creditors in *private full-file* credit bureaus is associated with greater private sector lending.** Our research found that 100% participation by data furnishers in full-file reporting increases private sector lending by at least 47.5% of GDP over the baseline of no data furnishers participating in the full-file system. This result is significant as an efficient deep and broad financial sector is vital to a nation's economic well-being and growth.
- **Increased participation in private full-file credit bureaus leads to greater access to mainstream credit.** Simulations conducted using 5.1 million Colombian credit files and a commercial-grade scoring model reveals that assuming a 5% default rate, the proportion accepted (for credit) rises from 19.28% to 41.35% when participation rises from 50% to 100% of data furnishers.
- **Higher participation rates in a private, full-file credit reporting system leads to fewer mistakes by lenders and fewer defaults by borrowers.** We also show that the better and greater lending resulting from the additional payment information translates to fewer high-risk individuals receiving loans and a far greater number of low-risk individuals deservingly getting loans. For the database of 5.1 million Colombians that we used, an additional approximate 3.5% who are bad risks would be extended credit as comprehensive credit reporting drops to only 25% of data furnishers from the 100% full-file scenario. Perhaps more importantly, close to 8% of the sample who are good risks and deserving of credit would be denied access.
- **Increased participation in the private full-file credit reporting system results in a more equitable distribution of credit.** Specifically, we found that women and younger individuals were disproportionately hurt with the removal of positive payment information, perhaps, we speculate, due to those groups having relatively thinner credit files.

A full version of the study *Economic Impacts of Payment Reporting Participation in Latin America* can be found at www.infopolicy.org/publications.htm.



1.0 Introduction

A healthy financial sector is crucial for economic growth, as both experience and extensive research show.ⁱ Economies with larger financial sectors, especially ones that serve the private sector, have higher rates of growth, better productivity growth rates, and faster growing capital stock.ⁱⁱ One economic dilemma for many emerging markets is that they suffer from relatively underdeveloped private sector lending. One practical response to this problem is an extensive consumer credit reporting system.

Around the world, the role of the consumer credit reporting system in promoting a greater and *healthier* consumer and private lending has been receiving more attention. Study after study has shown that credit bureaus are key to a well-functioning, modern financial system. Credit bureaus collect payment information about the financial obligations of consumers and businesses. Lenders use this information to evaluate the risk profile of borrowers as they are making decisions to extend loans and price them.

This information assists lenders in several ways. First, credit bureau data allows lenders to use a borrower's past credit history to determine how likely it is that the applicant will default on a loan. Secondly, these data allow lenders avoid

inadvertent and excessive lending to high-risk consumers. Without detailed information on an individual's risk profile, loans are priced to average risk, resulting in them being too expensive for low-risk borrowers but very cheap for high-risk borrowers. The result is over-lending to high-risk borrowers at prices that do not accurately account for the risks involved. Finally, reporting reduces the problem of "moral hazard" borrowers not making good on their loans. By reporting delinquencies and defaults to a credit bureau, a lender can restrict the ability of borrowers to get new loans from other lenders. Reporting gives borrowers another reason to act responsibly.

These observations were established long ago by academic and practical studies of information sharing in the finance sector. More recently, extensive surveys have empirically verified that credit bureaus do in fact help expand credit markets, lower the price of credit, and reduce delinquencies and defaults.ⁱⁱⁱ What this research indicates is in many ways common sense: people make better decisions when they have access to greater amounts of accurate information about their choices. But more importantly, these studies also help to answer a related key question: *What makes for an effective and well-functioning system of credit reporting?*

1.0 Introduction



Analyzing the value of information sharing requires that we specify what institutional features of credit reporting assist in improving lending, especially to the private sector. There is no credit reporting in the abstract. What information is included? Whose trade lines can a lender access? How long is information kept on file? Questions such as these must be answered. In addition to the general fact that reporting is more advantageous for the financial sector than non-reporting, earlier work on credit reporting has established that (i) reporting positive and negative information is better than reporting only negatives, and (ii) private bureau information reduces the share of non-performing loans in consumer and small-business loan portfolios more effectively than public bureau information.^{iv}

Still, some very important questions remain unanswered. One important issue that hasn't been fully explored is: To what degree do differences in the rate of *participation* by data furnishers in a full-file reporting system affect the financial services sector? Reporting credit information in a voluntary system is just that, and the fact that positive and other non-default information can legally be reported doesn't mean that a potential furnisher will. In a very trivial sense, participation matters since without it there is no information for lenders to use. But how much participation is needed? And how much is gained with each additional participant? In other words, how much *more* accurate are assessments of credit risk when lenders have greater levels of information?

Furnishers that do not participate often fear that sharing information will encourage competition. Yet, without a measurement of what is lost as a result of not participating, the costs and benefits of preserving market share in this way are unknown. Lack of participation may be a mistake from the point of view of growth and profitability, especially in emerging markets and markets with an underdeveloped retail lending sector.

In this report, we offer a systematic look at the effects of differences in participation in a system of private, full-file credit reporting, specifically in Latin America. Credit bureaus exist throughout Latin America, and the credit information they possess is used for banking supervision and lending decisions. But participation in the full-file system (that is the reporting of positive and negative payment information) and the share of files that are accounted for by positive information vary considerably throughout the region, as Table 1 shows.^v (A measure of 0 % indicates the lack of a bureau.)

TABLE 1:
Credit reporting
coverage and
prehensiveness in
Latin America

Country	Public registry coverage ^{vi} (% adults with files)	Private bureau coverage (% adults with files)	Positive information on consumer in files (% of total) ^{vii}
Argentina	22.10%	95.00%	25% to 49%
Bolivia	10.30%	24.60%	< 5%
Brazil	9.60%	53.60%	n/a
Chile	45.70%	22.10%	25% to 49%
Colombia	0.00%	31.70%	75% to 100%
Costa Rica	34.80%	73.40% ^{viii}	< 5%
Dominican Republic	19.20%	34.60%	75% to 100%
Ecuador	13.60%	0.00%	25% to 49%
El Salvador	17.30%	78.70%	10% to 24%
Guatemala	0.00%	9.90%	75% to 100%
Honduras	11.20%	18.70%	75% to 100%
Mexico	0.00%	49.40%	75% to 100%
Nicaragua	8.10%	0.00%	n/a
Panama	0.00%	40.20%	n/a
Paraguay	8.70%	52.20%	n/a
Peru	30.20%	27.80%	50% to 74%
Uruguay	5.50%	80.00%	75% to 100%
Venezuela	16.80%	0.00%	n/a
Mean (excl. absent bureaus)	18.1%	46.13%	
Max	45.7%	95.0%	
Min (excl. absent bureaus)	5.5%	9.90%	

1.0 Introduction



These differences have potentially significant economic consequences since, as mentioned, economic development depends on the dynamics of the financial system—generating savings, allocating capital, and transforming risk. This dynamic is becoming more important as emerging market economies move away from state-led models of development. In this context, credit reporting may be more crucial.

For Latin America, a well-functioning system of credit reporting can help to solve three economic problems by:

1. assisting in improving the efficiency of the financial sector, which has been relatively inefficient, by some measures;^{ix}
2. expanding private sector lending in Latin America, which has been relatively stagnant; and
3. helping reduce the chances of financial crises, which often stem in part from adverse selection and moral hazard problems in the banking sector.^x

How great are consequences? Our answer comes in two parts. The first is based on measuring the impact of participation in the private, full-file system by looking at its impact across 65 countries. We statistically compare the lending sector of economies with private, full-file systems and high participation to (i) those with lower participation and (ii) other systems.

In the second part, we use files from a system in which participation in a private, full-file system is extensive to simulate private systems with moderate and low levels of participation as well as private systems that contain only negative information.^{xi} These simulations utilize generic scoring models to examine the impact of varying levels of participation on (i) market size, (ii) loan performance, and (iii) the distribution of credit.

2.0 Findings

2.1 Estimations

Multi-country, statistical tests are a common way of measuring the impact of information sharing in credit markets. The typical approach is to test whether information sharing, and what kinds of information sharing, expands lending to the private sector.^{xiii} (Some studies, based on economies for which consumer loan information is available, have looked at the impact of information sharing on consumer lending as a share of GDP.^{xiii} However, this would restrict the test to developed markets for which data is available.) Here, we look at lending to the private sector, as a whole, as well.

We focused on participation rates in different kinds of reporting systems. Recent data from the World Bank Doing Business database contains information on public and private credit bureau coverage. We used coverage as a proxy for participation, based on the reasoning that greater participation by lenders in the reporting system results in more coverage; that is, with more participants a larger share of the market is brought into the reporting fold.

For these tests, the controls (what other factors are taken into account) are very important. The most important control is the ability of creditors to collect on defaulted loans. Intuitively, the ease or difficulty in collecting a loan determines whether and how much a bank is willing to lend to a borrower.^{xiv} The Doing Business database also provides an index of the legal rights of creditors (on a scale of 1 to 10) based on 10 different factors comprising collateral and bankruptcy law. The database also contains an index of credit information based on six factors relating to the extensiveness and depth of financial data in credit registries. Along with wealth and growth, these sets of aggregated legal and credit information attributes served as controls for the findings below.



2.0 Findings / 2.1 Estimations



We segmented coverage by whether a bureau was private or public and by whether it was a negative-only or a full-file registry since past research has established that ownership structure and data content matter. Coverage of the adult population was therefore measured for (i) public bureaus that provide only negative information, (ii) public bureaus that provide negative and positive information, (iii) private bureaus that provide only negative information, and (iv) private bureaus that provide negative and positive information. (The absence of a type of bureau was treated as equal to 0 % coverage.) The intuition behind this test is that content, coverage, and ownership matter for performance. (See endnotes for estimates of some of the models tested.^{xv})

Like others, we found that wealth and extensive rights for creditors account for a large degree of the differences in lending to the private sector. An extensive basket of creditor rights contributes significantly to private sector lending for obvious reasons: lenders are more willing to lend if their chances of recouping the principal are greater in the event of a default. Income also makes a difference, most it is assumed that borrowers are more able to pay.

However, what is quite telling is the implication that compared to a base of no coverage, 100% coverage of credit-eligible adults by a full-file, private bureau can be expected to increase private sector lending by more than 60 percentage points of GDP all else being equal. Or, equivalently, a rise in the rate of coverage from 50% to 100% is associated with an increase in private sector lending of 30% of GDP. The estimates of this parameter statistically significant across the models.^{xvi}

It is important to note that this figure is substantially greater than that found in an earlier extensive study done by Simeon Djankov, Caralee McLiesh, and Andrei Shleifer.^{xvii} In addition, these researchers found that the presence of a private bureau had a significant and substantial impact on private sector lending, with a resulting difference of 20% to 35% over the period 1978-2003. One likely reason for the difference between their estimates and ours is that they measured the impact of credit information sharing over a 25-year period, and private sector credit has grown greatly





since then. In our estimates, removing outlier observations (those with very high levels of private sector lending), notably the United States and the United Kingdom, resulted in a decline on the measure effect of coverage from about 6 % to 47.5% 10 percentage points greater than Djankov, McLiesh, and Shleifer's estimates.

Overall, three features of a credit reporting system appear to be crucial to the well-being and growth of the financial sector: (i) private ownership, (ii) comprehensive or full-file reporting, and (iii) widespread participation. This last factor is at once obvious and crucial. Given that reporting is voluntary, the actions of potential data furnishers matter considerably.

2.2 Simulations

Greater lending is positive provided it prudently takes into account demand and risk and is not simply a result of lenders recklessly extending loans to levels beyond borrowers' abilities to afford them. Greater information sharing should lead to more and better lending and shouldn't lead to *over*-indebtedness.

The second approach we took to evaluating the impact of greater participation, simulations, examined loan performance and acceptance rates jointly by exploring how more information enables lenders to better distinguish between good and bad risks. We used simulations to examine the impact of participation on (i) acceptance rates, (ii) default rates (or portfolio performance), and (iii) the distribution of credit. In a suggestive exercise only, we also looked at the extent to which socio-demographics can make up for the lack of positive payment information. Further, we examined how well scoring models performed—that is, how successfully they distinguished between good and bad risks.

The advantage of using simulations is precisely that they allow many things to be held constant—idiosyncrasies in the law, the impact of demographic distributions, fiscal and monetary policy, the business cycle, etc.—factors that can shape access to credit and the performance of the loans. The drawback of this approach is that it does not account for switches in credit decision-making, including a greater rationing of credit, the use of greater application data, and other responses to the loss of information from credit files. This is a limit, to be sure, particularly when the credit-scoring model is not re-optimized. To address this limit, we do use a re-optimized model for the negative only scenario. Furthermore, the cross-country evidence above, as well as those found in other studies, does provide parameters against which to check findings.

We used 5.1 million Colombian credit reports drawn from the DataCredito database as the underlying data for our simulations. Colombia credit files were selected for a variety of reasons. In terms of rule of law, legal tradition, development, and property rights, Colombia is close to the other countries of Latin America. Its credit reporting system is extensive and includes substantial amounts of payment

data from utilities, telecommunications, and rental services, in addition to financial service providers. Colombia has also been collecting full-file credit data for approximately 25 years, making it one of the oldest bureaus in the region.

Our primary focus was upon the impacts of varying rates of data furnisher participation in a private, full-file credit bureau. To measure this, we constructed four scenarios to simulate varying rate of data furnisher participation. In *Scenario I*, 75% of furnishers provided positive and negative data, while the remaining 25% provided only negative data. In *Scenario II*, 50% of furnishers provided positive and negative data, while the remaining 50% provided only negative data. In *Scenario III*, 25% of furnishers provided positive and negative data, while the remaining 75% provided only negative data. In *Scenario IV*, all furnishers (100%) provided only negative data.

Above, cross-national evidence indicated that private full-file information leads to wider lending and better loan performance. As mentioned, what the estimations could not provide was the impact of differences in the degree of participation in full-file reporting, as a result of a lack of data. That is, a system may be full file in name but not in fact. As was shown in Table 1 above, there are considerable differences in the share of trades accounted for by positive information. ***This exercise was designed to shed light on the impact of those variations.***

In our simulations, we used an actual commercial grade generic scoring model, ACIERTA, for the base line (100%) and to estimate the first three scenarios. The model was not re-optimized for the data. For the negative-only scenario, we developed a “restricted” ACIERTA model that was re-optimized for the negative-only data.

In our exercise, the complete set of files and all the hypothetical files, including the “negative-only files,” were scored in July 2004. The scores represent predictions of a consumer's chances of delinquency, that is, of being 90 or more days past due on at least one account in the period between August 2004 and July 2005—the “observation period.” We tested these predictions by examining the borrowers' actual behavior during the observation period.



We evaluated the consequences of different participation rates in two ways.

First, we measured the consequences of changes in data furnisher participation rates on the loan portfolio. The model's score is an effective prediction of the chances that an individual will be 90 or more days delinquent on any open account in the following year. By ordering scores, from highest to lowest, we ranked individuals based on those least likely to be delinquent in the coming year to those most likely to be delinquent. This allowed us to observe delinquency rates during the performance period (for which we have data of actual behavior). By comparing the delinquency rates for segments of the rank ordering, we evaluated the utility of more data.

We compared the differences in two ways. We assumed that a lender targeted an acceptance rate of 20%. We then took the top 20%, as judged by the model to be less likely to

default than the other 80%, for each of the scenarios. For each of these sets, we measured and compared the associated actual delinquency rates during the “observation” period following the “prediction” period. In this manner we were able to evaluate the extent to which additional information helps a lender to more accurately predict the risk of lending to a particular borrower.^{xviii} If the use of more information in generic scoring models increases performance, we would expect a lower default rate for the loan portfolio than would be the case if less credit information were used. Similarly, we would expect a greater participation rate in a private, full-file credit bureau—owing to the greater volume of positive and negative data on a larger share of borrowers—to result in lower overall delinquency rates than would be the case if fewer creditors participated in the system.

Conversely, we assumed that a lender targeted an acceptable delinquency rate. (The delinquency rate increases as more borrowers who are lower down the risk rank order are

2.0 Findings / 2.2 Simulations

extended credit.) For a desired delinquency rate, say 5%, we measured the associated number of potential borrowers, which provided us an associated acceptance rate as well. By comparing the different acceptance rates in different scenarios, we were able to measure the degree to which more information about borrowers affects access to credit in the form of an acceptance rate. Thus, as the number of creditors that fully report to a private, full-file credit bureau increases, we would expect that the acceptance rate for any given default rate would increase as well.

For each of these components, we broke down the impact of changes in reporting by age and gender. Across scenarios we also evaluated how a reduction in the amount of positive information provided by data furnishers affected the acceptance rate for certain socio-demographic segments, for a target delinquency rate.

The first component—the default rate for a targeted acceptance rate—measures the relative efficiency of the different scenarios. The second—the acceptance rate for a targeted default rate—measures the breadth of the system, or how widely credit is available. The demographic analysis shows how different social segments are affected by changes in the reporting system.

A second method for evaluation looks at the increases in mistakes. The principal cause of the negative effects of lower data furnisher participation on credit access and loan performance is that, *with less information, it becomes harder to predict the behavior of borrowers*. Low risks are increasingly read as high ones, and high risks are increasingly read as low ones. Mistakes are made in *both* directions.

There are two ways of measuring the changes in mistakes.

The first way looks at “Type I” and “Type II” error rates associated with each scenario.^{xix} A Type I error is a false positive; simply, a high-risk borrower is judged to be low risk. A Type II is a false negative, or, as implied, a low risk borrower is judged to be high risk. In the former, those who do not deserve credit—in the sense that they are risky and this cost will be borne by others—are given credit. In the latter, those who deserve credit—in the sense that they are responsible borrowers—are denied credit.

The second measure of changes in mistakes uses the Kolmogorov-Smirnoff (K-S) statistic associated with each scenario. The K-S statistic is a measure of how well a model can distinguish between different groups, here a low risk group and a high risk group. The K-S in this instance simply measures the maximal distance between the cumulative distributions of bads (or curve of delinquencies) over the score range and goods (or curve of on-time payments) across the score range, with a maximum of 100—where it can perfectly distinguish between a good and a bad risk. (For convenience, we have scaled the K-S statistic for the full-file model estimates to 100 so that the relative differences can be read as a percentage of the baseline of the 100% participation case.)





2.2.1 Access and Price of Credit

Acceptance Rates: The simulations show that, as expected, when lenders find it more difficult to accurately discern low and high risks, they will be either forced to accept higher delinquency rates or reduce their acceptance targets by significant levels. Table 2 provides a sense of the magnitudes by which acceptance rates drop for a given loan performance target across the scenarios.

At lower target default levels, acceptance rates drop considerably as fewer data furnishers provide positive information. If we take the default target to be 5% (roughly non-performing loans as a share of total loans in Colombia in recent years) the acceptance rate drops by more than half from 41.35% to 19.28% if only half of all data furnishers were to provide only negative information.^{xx} These drops

TABLE 2:
Acceptance rates by target defaults under differing levels of participation

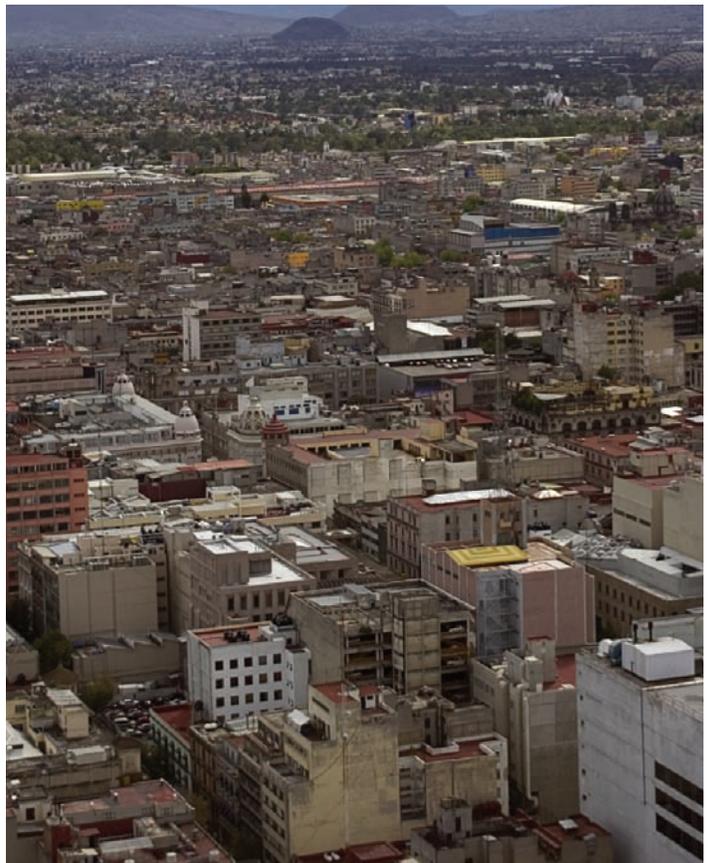
Share of furnishers providing full-file information (remainder provides negatives only)					
<i>Target default rate</i>	100%	75%	50%	25%	0%
3%	10.00%	6.64%	4.73%	4.80%	2.56%
5%	41.35%	28.96%	19.28%	9.69%	5.15%
7%	58.82%	45.59%	36.42%	25.71%	13.60%
10%	73.06%	68.09%	68.08%	68.09%	54.97%
12%	77.80%	77.21%	76.49%	75.06%	72.26%

2.0 Findings / 2.2 Simulations / 2.2.1 Access and Price of Credit

are significant with small losses of positive information resulting in much more restricted access to credit. For lenders, this translates into a reduced market size for lending. (Similar trends can be seen if we restrict ourselves to acceptance rates and defaults for non-financial services.^{xxi})

As the target default rate increases, the acceptance rates converge across scenarios and meet at 100%. It is for this reason that at a 12% targeted default rate the acceptance rate falls from 77.8% to only 68.82%. Such default targets are unsound for an economy and translate into higher prices for credit as borrowers must cover greater losses.

These acceptance rate drop offs are considerable. As mentioned, this is also largely a result of the fact that delinquencies are being measured on many sectors, mortgages, revolving credit, retail accounts, utilities, telecommunications, and rentals. The results show that a large share of the market is captured in the 100% scenario when the default rate is modest (e.g. 5%-7%). It further shows that the acceptance rate declines dramatically as even a small number of furnishers stop reporting positive payment data.



2.0 Findings / 2.2 Simulations / 2.2.1 Access and Price of Credit

Default Rates: A complementary view of the impact of reduced furnishing is shown in Table 3. It demonstrates what would happen to default rates as furnishers provide less positive information for a given acceptance target.

As implied in table 2 and seen explicitly in table 3, default rates increase for any given acceptance target as furnishers cease providing positive information. From the other perspective, delinquency rates *decline* as data furnishers begin to provide positive information. To get a sense of the magnitudes, compare the results for the 100% participation in full-file instance and the 5% participation in full-file scenario for an acceptance target of 40%. The delinquency rate increases from 4.89% to 6.67%, an increase of nearly 2 percentage points, that is, defaults increase by 36.4%.

These increases are considerable and result from the broad set of trade lines included in the performance test. However, the shifts for financial credit may not be significantly smaller. Simulations done by scholars associated with World Bank projects on credit reporting found that, for the same acceptance target, default rates increased by 28% and 83% for Argentine and Brazilian files, respectively, as they went from full-file to negative

only.^{xii} Crucially, they restricted their simulation to performance on loans in excess of \$20,000 USD in the former case and \$300,000 USD in the latter, loans which are much more likely to be collateralized. These results suggest that the magnitude of changes may not be significantly greater with the addition of smaller loans and non-financial lines.



TABLE 3: Default rates by target acceptance under differing levels of participation

<i>Share of furnishers providing full-file information (remainder provides negatives only)</i>					
<i>Target acceptance rate</i>	100%	75%	50%	25%	0%
20%	3.52%	3.72%	4.66%	5.91%	8.46%
30%	4.12%	4.62%	5.74%	6.78%	9.06%
40%	4.89%	5.66%	6.67%	7.52%	13.85%
50%	5.86%	6.70%	7.49%	8.22%	14.40%
60%	7.20%	7.73%	8.49%	9.25%	15.30%

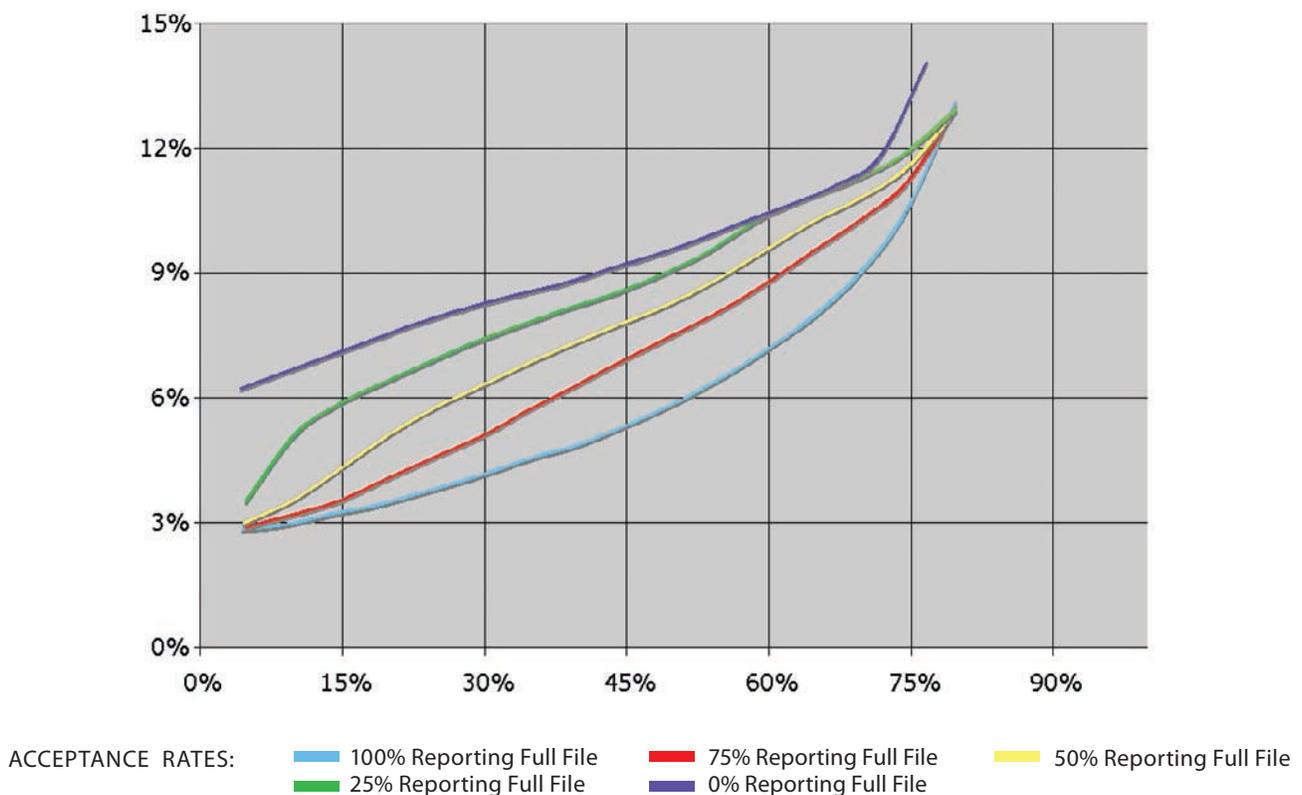
2.0 Findings / 2.2 Simulations / 2.2.1 Access and Price of Credit

Shifts in the Trade-Off: We conducted simulations for a range of default targets and a range of acceptance rates, as implied by Tables 2 and 3. Together they depict a shift in the trade-off between acceptance rates and delinquency rates. Figure 1 shows the shift in this “trade-off curve” for the four scenarios.

Across all scenarios, it is clear that the trade-off worsens relative to the 100% full-file case. As furnishers provide less positive information, the “higher” the curve; each acceptance target corresponds to a higher default rate and each default level to a lower acceptance rate. Crucial is the fact that the declines in market share are substantial. At a 6% default rate, the market dramatically contracts (by more than 36%) in moving from a case in which all furnishers provide

positive information to one in which 75% do so. Looked at differently, an increase in participation from 75% to 100%, given a 6% target default rate, enables nearly a 50% increase in market size. Those firms fearing “cherry picking” and harboring competitive concerns must weigh the opportunity cost of foregone market growth against any perceived customer losses potentially stemming from sharing full-file customer information with a private credit bureau.

FIGURE 1: Market size and loan performance trade-offs by full-file participation rates

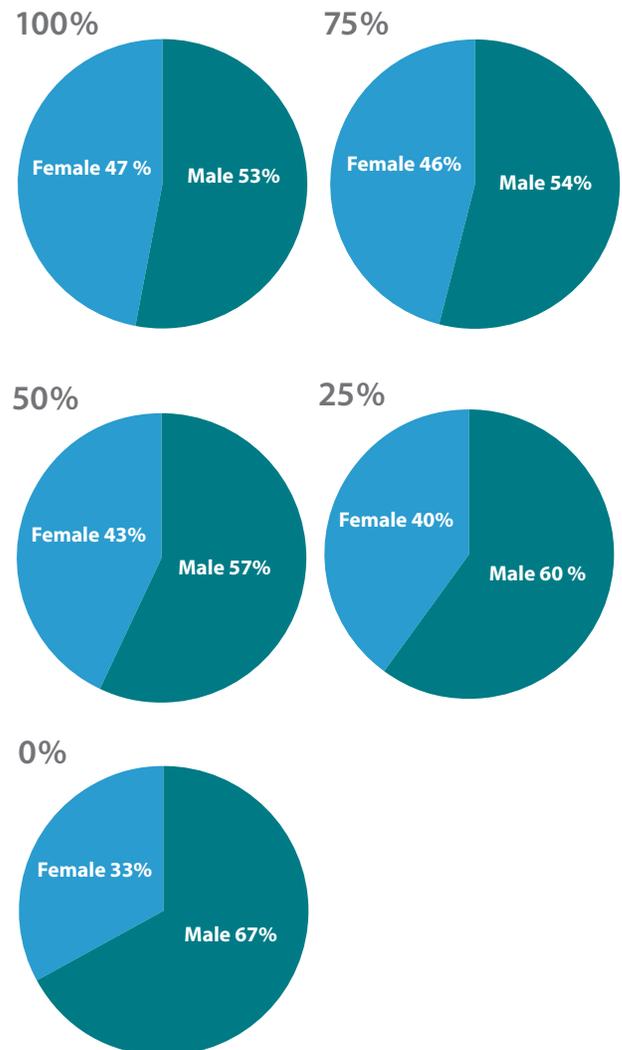


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FIGURE 2 : Women as a share of borrowers by full-file participation rates

The results for changes in acceptance rates by age (for a 7% default target) are also telling. Consumers less than 32 years old do not see a steep drop in acceptance rate until 75% of data furnishers cease reporting positive information, at which their acceptance rate falls from 16.48% in the 100% scenario to 8.61%. But those between 32 and 50 years of age do see significant drops in their relative and absolute acceptance rate. Younger borrowers are pushed out of the market for credit faster than older ones as we move across scenarios.



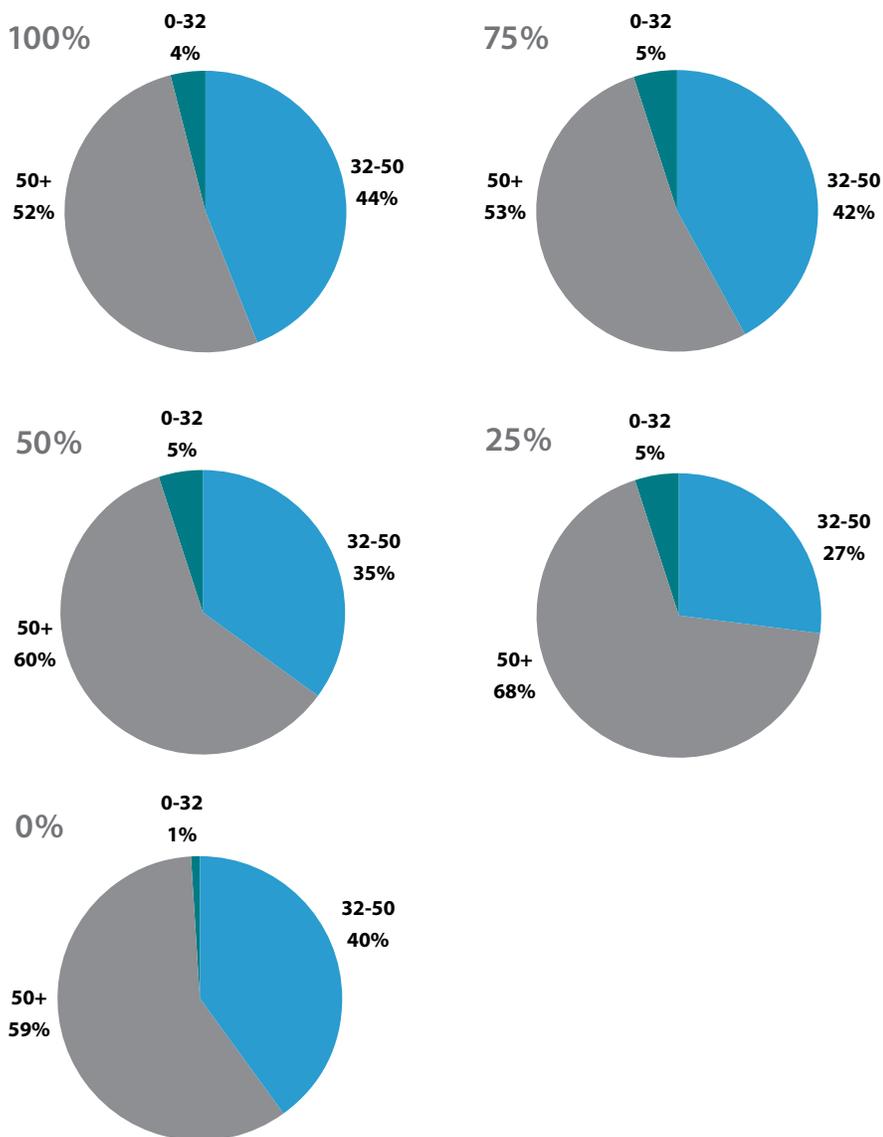
Socio-Demographic Distribution of Changes: While all segments witness a decline in access to credit, they do so unevenly, given reduced data furnisher participation rates.^{xxiii} Women and young people are more likely to be pushed out of the market by a substantial margin due to a lack of positive information than are men and older consumers with a longer credit history.

As the share of furnishers providing comprehensive information drops to 50%, the share of women among the accepted (for a 7% default rate) drops from 47% to 43%. In the negative-only scenario, the share of women among the accepted drops to only one-third (33%).

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FIGURE 3: Age Groups as Share of Borrowers by full-file participation rates

The most likely reason for these differences is that women and young people are more likely to be newer borrowers. As information falls out, those with relatively less information are hit harder. As a result, they are more likely to cross the line where decisions can be made about them and where credit is more frequently rationed among them.





2.0 Findings / 2.2 Simulations

2.2.2 Changes in the Accuracy of Prediction

The loss of the ability to assess risk accurately, which leads to rising default rates and/or worsening acceptance rates, as shown above, stems from the fact that with less information mistakes are more common. The worsening K-S implies as much (Table 4). Recall that the K-S measures ability of a model to distinguish types based on the information that has been inputted. Here, we have scaled it so that the full-file (100%) case is set to 100; the K-S for the other scenarios represents the score as a share of the full-file measure and thereby shows the relative ability of the model to tell a good risk from a bad one as positive information falls out.

The model loses predictive effectiveness with the loss of positive credit data. Moreover, a model optimized for the derogatory data (the negative-only 0% scenario) also shows a loss of predictive power. With 25% of furnishers reporting only negative information, that is with 75% still reporting positives and negatives, the model fit declines by nearly 8%. Practically, this means that the model(s) is (are) becoming more and more “wrong” in their identification of who is a good risk and who is a bad one.

TABLE 4: Scaled k-s (max)

	% providing positive and negative information (remainder provides only negative data)				
Scenario	100%	75%	50%	25%	0%1
Total	100.00	92.42	90.27	87.67	86.78

2.0 Findings / 2.2 Simulations / 2.2.2 Changes in the Accuracy of Prediction

Table 5, showing changes in Type I and Type II error rates for the four scenarios, paints a starker picture of how mistakes increase when there is less information available. Misjudgments of an individual’s risk profile become more common as furnishers cease reporting positive information. The logic of credit reporting and lending rests in the simple truth that more information allows better identification of a situation, in this case, identification of who is a low or high credit risk. Positive information is also extremely important for this process.

For Type I and Type II errors, we restrict the results to the unmodified ACIERTA-based simulations, that is, all the scenarios except the negative-only one.

Predictably, mistakes become more frequent.^{xxiv} Those who are risky consumers are more likely to get credit, while those who are good risks (not over-indebted and/or have a history of paying responsibly) are less and less likely to be extended credit. The latter group is larger than the former. For the database we used, *approximately an additional 181,000 people who are bad risks would be extended credit as comprehensive credit reporting drops to only 25% of data furnishers from the 100% full-file scenario. Perhaps more importantly, nearly an additional 411,000 people who are good risks and deserving of credit would be denied access.*

It was shown above that the loss of information results in lower acceptance rates for any given target default rate. However, this result is only part of the picture. Given that false negatives increase, the number of those who deserve credit but are denied is even greater than that indicated by simple acceptance rates as some who would be denied credit receive it, and thereby distort the picture of how much individuals who are good risks are placed at a disadvantage.

TABLE 5:
Changes in error rates

Share of tradelines consisting of both positive and negative information			
	75%	50%	25%
Type I (false positives, or mistaking a high risk borrower for a low risk one)	+1.00%	+2.22%	+3.31%
Type II (false negatives, or mistaking a low risk borrower for a high risk one)	+3.81%	+5.32%	+7.53%



3.0 Conclusion

The results described above are consistent with established theory, earlier generation empirical studies, and experience. The provision of more positive payment information helps differentiate low risks from high ones. The following results were derived from this analysis:

Broader Access to Credit:

The net effect is wider access to credit for consumers in the form of a greater acceptance rate. More importantly, this wider access can be gained *without* increases in loan non-performance rates. These simulations show considerable shifts in performance, although, as noted, these changes in performance rates are measured over a series of economic sectors.

Better Performing Loans:

At reasonable rates of access, such as an acceptance rate of 60%, we found a doubling of the default rate as participation in reporting positives fell to zero. The measured magnitude may be skewed by the inclusion of non-financial data in our simulations, but not necessarily by a significant degree.

Fairer Access to Credit:

Disadvantaged groups such as women and younger borrowers, which are more likely to be new borrowers, are disproportionately affected in terms of credit access when data furnishers withdraw positive information. Conversely, the addition of positive information is likely to assist these groups in gaining access to credit.

Stability in Financial Sector:

Latin American financial markets have been stagnant in recent years relative to other regions, such as East Asia, and they measure slightly unfavorably to those in Eastern Europe.^{xxv} Specifically, there are indications that Latin American banks are less efficient than their counterparts elsewhere.^{xxvi} This is not to suggest the reason is necessarily because of low participation in comprehensive reporting. Rather, the issue is whether greater participation in comprehensive or full-file reporting can assist the financial sector to the extent that reporting can help to expand the size of private sector lending and improve the performance of the retail banking sector.

3.0 Conclusion

One specific value of full-file reporting in the region may lie in its potential to limit financial crises, at least to the extent that crises result from adverse selection and moral hazard problems in lending.^{xxvii} Latin America has been the most financial crisis prone region in the world for the last 30 years, averaging 1.25 crises per country, with 35% of countries experiencing recurrent crises.^{xxviii}

Risk Assessment vs. Marketing: The benefits of greater reporting have been verified in a number of studies. Yet, many data furnishers—especially in the financial sector—are reluctant to participate in the credit reporting system and provide positive payment information. The great hurdle to wider participation is the fear harbored by lenders that competitors will use their information to poach the more profitable of a lender’s customers. In theory, positive payment information would permit a competitor to identify a profitable client. However, a qualification to that theory is necessary.

The ability of a competing lender to “poach” depends critically upon whether it can access credit reports for marketing purposes or whether it can only do so when a borrower applies for credit. Positive payment information permits competitors to better price loans when a borrower comes to them for credit. However, without the ability to access credit files for marketing purposes, a competing lender cannot efficiently go in search of better credit risks or more profitable customers.

Without the ability to use reports for marketing, though, a lender can still offer competitive terms that better reflect risk when prospective borrowers come to them.

Under-developed Markets: Competition in an economy’s financial sector is the result of many factors: the ease of starting a business, difficulty of capitalization, set up costs and search costs. The Latin American region, like the rest of the world, has seen improved consumer financial data systems as a result of new and cheaper technologies for collection, storage, transmission, and computing, and has also experienced increases in the information available on consumers. The region, however, has not seen a discernable trend towards less concentration in the financial sector, despite the progress of liberalization.

Perhaps more important is the question of what is lost as a result of a fear of competition. As the results above suggest, profit rates—in so much as delinquencies and defaults affect profits—are significantly worsened and/or markets are considerably smaller. The opportunity costs of the defensive actions are enormous. Over time, these losses do take their toll on financial markets, loan performance, and eventually the entire economy in the form of growth and productivity.

Appendix

The Question of Demographic Information vs. Payment History

The negative-only reporting system found in Costa Rica may make up for the absence of positive payment information with extensive socio-demographic information—age, address, parents’ address, dependants, employer, past employers, and so on. This raises the question to what extent, if any, can socio-demographic information compensate for positive payment information?

We attempted to answer this question through a structured comparison of Costa Rican and Colombian files.^{xxix}

For each set of files, we created a hypothetical file made of the variables common to both systems: a “Costa Rican restricted” purged of socio-demographic information not present in the Colombian files, and a Colombian “negative only”, or “restricted” ACIERTA. Research-grade scoring models were developed for these two sets. Another model was developed to score the complete Costa Rican files containing all socio-demographic variables. The results are then compared: specifically (i) the “Costa Rican restricted” were compared to the Costa Rican complete files; (ii) the Colombian negative-only compared to the Colombia full-file, ACIERTA instance; and (iii) the differences in K-S score differences in the two sets were compared (see Table 6).

The K-S statistics allow us to compare the value of different data sets. Recall, that the K-S is an indicator of an ability to tell good risks from bad ones. **It should be stressed that the results are suggestive of the relative value of these socio-demographic and positive payment information, but firmly establishing the differences will take more research.** Table 6 shows the K-S statistic for the 4 simulations.

The relevant measures here are between the differences in the K-S scores for Costa Rica, on the one hand, and Colombia, on the other. The implication is that what is gained by much more socio-demographic information is modest when compared to what is gained by much richer full-file payment information. The ability to discern goods from bads (or true positives from false positives) increases

TABLE 6: k-s(max) scores of adding socio-demographics
Comparing costa rica and colombia

Costa Rica Restricted	40.5
Costa Rica Complete	49.3
Colombia Negative Only	54.2
Colombia Full-File (ACIERTA)	67.3

considerably in moving from the Colombian negative only to the Colombian full-file scenario (from 54.2 to 67.3). By contrast, socio-demographic information improves the ability to distinguish goods from bads in the Costa Rica files by less (from 40.5 to 49.3).

Interpreting these statistics to make them comparable is of course a matter that can be contested. However, if we consider that given the negative-only base line of the restricted Costa Rican simulation (40.5), the distance between the curves can be increased only maximally by 59.5, as 100 is the maximum. For Colombian files, the available “space for improvement” is 45.8. The addition of positive payment data to the Colombia files improve the K-S to cover nearly 28.6% of this space. By contrast, the addition of socio-demographic information to Costa Rican files covers 14. % of the available “space for improvement.”

Again these results are suggestive, but they are consistent with theory, observation and experience. We can say, however, that the addition of payment history, in the Colombian case, helps to better distinguish true positives from false positives relatively more than the addition of richer demographic information does for the Costa Rican files.

Endnotes

ⁱ For example, see Ross Levine, “Financial Development and Economic Growth: Views and Agenda” *Journal of Economic Literature*, Vol. 25 (June 1997), pp. 688–726; Jose De Gregorio and Pablo Guidotti, “Financial Development and Economic Growth.” *World Development*, Vol. 23, No. 3, (March 1995) pp. 433-448.

ⁱⁱ In extensive statistical tests, some studies have found that an increase in private sector lending by 30 percent of GDP can be expected to witness an increase in GDP growth by 1 percent per annum, and increases in productivity and capital stock growth by 0.75 percent per annum. These estimates are conservative compared with many others. Ross Levine, “Financial Development and Economic Growth: Views and Agenda.” p. 706.

ⁱⁱⁱ Inter-American Development Bank, *IPES 2005: Unlocking Credit: The Quest for Deep and Stable Bank Lending*. (Washington, DC: IADB, 2005) www.iadb.org/res/index.cfm?fuseaction=Publications.View&pub_id=B-2005E; John M. Barron and Michael Staten in “The Value of Comprehensive Credit Reports: Lessons from the U.S. Experience,” pp. 273-310 in Margaret M. Miller ed., *Credit Reporting Systems and the International Economy*. Cambridge, MA: The MIT Press. 2003.

^{iv} Public bureau information on consumers appears designed to be used for largely supervisory purposes. Private bureaus, in so much as profits are generated by collecting information that is valuable to lenders, appear better situated to identify valuable information and design new products for better lending decisions. Inter-American Development Bank, *IPES 2005: Unlocking Credit: The Quest for Deep and Stable Bank Lending*. Chapter 13, p. 178.

^v From the World Bank Doing Business database, www.doingbusiness.org/ExploreTopics/GettingCredit. * TU Latin America is unsure of this estimate. There are also considerable differences in the provision of positive information, though its provision is nowhere prohibited by law.

^{vi} Source: World Bank, Doing Business Database. www.doingbusiness.org/ExploreTopics/GettingCredit/. For 2005.

^{vii} The data is for 2001, except for Costa Rica, Colombia and Honduras, which is from 2005. From Arturo Galindo and Margaret Miller, “Can Credit Registries Reduce Credit Constraints.” March 2001. Research Department. Inter-American Development Bank, Washington, D.C. Additional information from interviews with TransUnion Latin America.
www.iadb.org/res/index.cfm?fuseaction=Publications.View&pub_id=S-143

^{viii} TransUnion’s database contains files on 2.9 million Costa Rican adults (18+ years old). Many of these files have no financial information, but do contain extensive socio-demographic data.

^{ix} As indicated by net interest margins, which have been 3 percentage points higher in Latin America than in all other regions. Net interest margins are defined as the bank interest income minus interest expense, over overhead cost, and the ratio of overhead costs to total assets. The average risk-weighted capital ratio is slightly higher in East Asia. Data from the World Bank financial structure database.

^x Frederic Mishkin. 2003. “Financial Policies and the Prevention of Financial Crises in Emerging Market Countries.” In Martin Feldstein, ed., *Economic and Financial Crises in Emerging Market Economies*. Chicago, IL: University of Chicago Press. Latin America has been the most financial crisis prone region in the world in the last 30 years, averaging 1.25 crises per country. Moreover, a greater share of countries in Latin America have experienced recurrent financial crises in the same period (35%) than in any other region.

^{xi} This method was developed by John M. Barron and Michael Staten in “The Value of Comprehensive Credit Reports: Lessons from the U.S. Experience.” Since their work, similar simulations (of the same country under a different reporting system) have been conducted for the United States, Brazil, Argentina, and Mexico.) Giovanni Majnoni, Margaret Miller, Nataliya Mylenko and Andrew Powell, “Improving Credit Information, Bank Regulation and Supervision.” World Bank Policy Research Working Paper Series, No. 3443. www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2004/12/17/000160016_20041217171024/Rendered/PDF/WPS3443.pdf

^{xii} Some studies, based on economies for which the information is available, have looked the impact of information sharing on consumer loans. Information on consumer loans is not available for many economies, and private sector lending (as measured by survey of the banking sector IMF, International Financial Statistics. “Claims on the private sector”. Line 52D for 2004., is used as a proxy.

^{xiii} Marco Pagano and Tullio Japelli. “Information Sharing in Credit Markets.”

^{xiv} Marco Pagano and Tullio Japelli. “Information Sharing in Credit Markets.” Earlier tests considered the impact of legal traditions, wealth, economic growth, the age of the credit registry, the rights of creditors, and, more recently, and the impact of ownership structure (or public private differences). Each subsequent look at information sharing adds new variables while keeping, in some form, ones previously established as important.

^{xv} Estimate of impact of different credit reporting systems on private sector lending as a share of GDP. As different estimates show, three factors are crucial: wealth, measured as (log of) GDP at purchasing power parity; (ii) the rights of creditors conferred by law; and (iii) participation in a private and full-file bureau, with more participation resulting in greater lending.

VARIABLE	Model I	Model II	Model III	Model IV (reduced)
Constant	-142.40*** (35.31)	-139.48*** (35.49)	-133.97*** (35.41)	-130.80*** (32.20)
Log of GDP per capita (adjusted for PPP)	20.31*** (4.65)	18.37*** (4.45)	17.38*** (4.41)	16.85*** (3.87)
Avg. change in GDP (1995-2004)	-1.20* (0.70)	-0.82 (0.64)		
Legal rights of creditors (from 0 to 10)	4.55** (2.07)	4.99** (2.06)	4.68** (2.06)	4.80** (1.97)
Credit information (from 0 to 6)	-3.87 (2.88)			
Private full-file coverage (0 to 100, as percentage of adults)	0.72*** (0.20)	0.60** (0.18)	0.66*** (0.17)	0.67*** (0.16)
Private negative-only coverage (0 to 100, as percentage of adults)	-0.02 (0.86)	-0.13 (0.46)	-0.06 (0.46)	
Public full-file coverage (0 to 100, as percentage of adults)	-0.11 (0.41)	-0.26 (0.40)	-0.17 (0.39)	
Public negative-only coverage (0 to 100, as percentage of adults)	0.16 (0.46)	-0.01 (0.86)	-0.09 (0.86)	
R squared	0.7075	0.698	0.6895	0.6883
F-stat (p value)	16.93 (1.88e-012)	18.82 (9.65e-013)	21.46 (4.251e-013)	44.9 (1.887e-015)
Residual Standard Error	29.45	29.65	29.81	29.12
N	65	65	65	65

Errors in parentheses; * p < 0.1; ** p < 0.05; *** p < 0.01

^{xvi} These results are consistent with IADB tests on the effect of private bureaus.

^{xvii} The most extensive tests on the impact of the availability of credit information on private sector lending as a share of GDP were conducted by Simeon Djankov, Caralee McLiesh, Andrei Shleifer, "Private Credit in 129 Countries." NBER Working Paper No. 11078 (January 2005). <http://papers.nber.org/papers/w11078>. Our approach is derived from theirs, and our results are broadly consistent with their findings. Unlike our tests, they used dummy variables for the presence of a private bureau and for a public bureau. Their creditor rights index had fewer factors, but they also included an inflation variable in their test. They further tested the impact of legal origin, whether the legal code was derived from Anglo, Germanic, Scandinavian, French, or Socialist law, and also for contract enforcement days. We ran some estimates using legal origin, and some were significant along the lines others have found. However, the creditor rights variable were more significant, as well as theoretically and intuitively more compelling. It is very likely that the creditor rights variable captures the effect of "legal origin", the national-cultural sources of a country's legal code.

^{xviii} Practically speaking, these delinquency rates are measures of non-performance, and in the aggregate provide an indication of how healthy the consumer lending segment will be under different participation rates, all else being equal.

^{xix} To measure Type I and Type II errors, we examined the top 25 percent and bottom 25 percent of consumers as rank ordered by the models, for each of the four scenarios. The top and bottom quartiles were used because they were proxies for what are to be unambiguous “goods” and “bads” in practice. As we approached the median of the distribution, classifying an outcome as an error becomes harder. For these segments, in each scenario we examined delinquencies and non-delinquencies. This approach helps to measure the relative efficiency and fairness (in a different sense than above) of different reporting regimes.

^{xx} Impaired loans as a share of gross loans averaged 4.33 percent between 2000 and 2004. Source: Bankscope. Non-performing consumer loans as a share of consumer loans have been declining in recent years; it stood at approximately 6 percent in early 2004. IMF, “Colombia: Third Review Under the Stand-By Arrangement and Request for a Waiver of Nonobservance of Performance Criterion.” (Washington, DC: IMF, July 15, 2004) IMF Country Report No. 04/199. p. 9

^{xxi} This table reports acceptances based on the chances that an individual has defaulted on a non-financial trade.

NON-FINANCIALS: ACCEPTANCE RATE				
Share of furnishers providing positive and negative information				
Target Default rate	100%	75%	50%	25%
5%	5.50%	4.00%	2.95%	1.96%
7%	37.30%	29.95%	17.96%	10.07%
10%	61.03%	49.36%	43.14%	36.01%
12%	69.75%	63.27%	57.70%	50.43%

^{xxii} Giovanni Majnoni, Margaret Miller, Nataliya Mylenko and Andrew Powell, “Improving Credit Information, Bank Regulation and Supervision.” Table 4, Panel A.

^{xiii} As shown, the acceptance rate falls faster for women and the young.

ACCEPTANCE RATE					
For a 7% default rate	Share of furnishers providing positive and negative information				
	100%	75%	50%	25%	0%
Male	64.92%	51.40%	44.31%	33.68%	10.99%
Female	63.20%	42.24%	33.43%	22.30%	5.10%
Age categories					
0-32	16.48%	15.47%	14.20%	8.61%	0.90%
32-42	49.72%	44.75%	28.42%	13.71%	7.67%
42-50	58.31%	45.20%	30.52%	19.14%	12.84%
50-57	62.76%	52.02%	39.61%	19.13%	13.00%
57+	77.13%	72.98%	69.54%	66.49%	20.01%

^{xxiv} Given the proprietary nature of the commercial models performance statistics, we are not able to provide the actual rates, only changes.

^{xxv} See Alicia García Herrero, Javier Santillón, et al. “Latin American Financial Development in Perspective” <http://ideas.repec.org/p/wpa/wuwpfi/0304008.html>.

^{xxvi} Alicia García Herrero, Javier Santillón, et al. “Latin American Financial Development in Perspective.” pp. 20-21.

^{xxvii} Crises at times result from a shock that exacerbated moral hazard and adverse selection problems. To the extent that these can be reduced by better reporting, crises can be reduced. Frederic S. Mishkin, “Financial Policies and the Prevention of Financial Crises in Emerging Market Countries.” In Martin Feldstein, ed., Economic and Financial Crises in Emerging Market Economies. (Chicago, IL: University of Chicago Press, 2003)

^{xxviii} The 2005 Report on Economic and Social Progress in Latin America. Inter-American Development Bank (Washington DC: IADB, 2005) p. 30, Table 3.1. <http://www.iadb.org/res/ipes/2005/index.cfm>

^{xxix} Approximately two-thirds of data furnishers in Costa Rica do not report negatives that are less than 120 days past due. Many delinquencies, defined as 90+ days past due, therefore do not make it on the credit reports. These differences make any comparison of changes in performance based on the credit reports impossible. It should be stressed that comparison is meant to be suggestive, in order to establish a benchmark for the comparison, and to point out that the starting points are rather different. Being very different economies, Costa Rica’s per capita GDP is twice that of Colombia’s. Yet, private sector lending as a share of GDP is largely equivalent—averaging 26.6 percent in Colombia and 26.7 percent in Costa Rica for the 5-year period between 1999 and 2003. Source: International Financial Statistics, IMF database. Private sector lending as a share of GDP, from the Banking Survey.

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